PC *review*

THE COMPLETE GUIDE TO PC ENTERTAINMENT

2 TERRIFIC DISKS
TWO PLAYABLE DEMOS PLUS A COMPETITION

**Missing disk?
Consult your
newsagent**

**Missing disk?
Consult your
newsagent**

Golf games

REVIEWS
*40 unmissable pages, including Birds of Prey
and Wizardry VII*

HARDWARE
The definitive guide to soundboards

COMPETITION
*Win a snooker cue with our
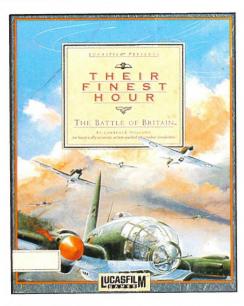Jimmy White cover disk demo
(286 processor and
upwards only)*

PCreview

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a golfing fourball

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Contributors

Jonathan Inglis
A fine art graduate and former art teacher, Jonathan Inglis has never been quite the same since acquiring a ZX-80 computer in 1981. He prefers computer art, because it avoids "the misery of cleaning brushes and putting lids back on tubes". A freelance illustrator, his work has appeared in The Sunday Times, Time Out and The Spectator, among others.

Tim Metcalfe
Former editor of Computer and Video Games magazine, Tim Metcalfe has been involved in computer entertainment since the early 1980s when the Spectrum and Commodore 64 were king and people didn't laugh at the Oric. In 1988 he went freelance, becoming in turn associate editor of GM magazine, the independent role-playing magzine, Games Master International and the Complete Computer Entertainment Guide. He was also co-creator and author of the controversial telephone game Dial Doctor Dark. Currently Tim works for a newspaper group based in his home town of Oxford.

Ciarán Brennan
Ciarán Brennan is a freelance journalist and PC Review's resident newshound. As a former editor of both PC Leisure and The One magazine, Ciarán has been enhancing computer magazines with a touch of the blarney since 1986. A keen and versatile games player, Ciarán also took on the onerous task of editing and taming this month's free supplement, The Top 100 Games Guide. Best of all though, this month has seen the arrival of his brand new 486 dream machine, complete with sound card, joystick and go-faster stripes. Funnily enough, we haven't seen him since.

Laurence Scotford
Having been an avid games player since the days when mono graphics were still drawing gasps of admiration, PC Review's deputy editor has seen more games and machines come and go than he cares to remember. He served his time on the late ACE and, more recently, The One, but is now a dedicated convert to the cause of PC games. Outside the office, he's currently busy writing a book on Populous and Populous II.

3rd Dec

Letters

PC Review welcomes letters on any subject under the PC sun. The editor will chop them to fit if need be, and we'll assume letters are for publication unless you state otherwise. Send your mail to Letters, PC Review, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. If you have access to CIX (Compulink Information Exchange) you can send your letters to our mailbox – our ID is pcreview. Star Letters win software prizes!

Ultima woes

Some news for owners of Amstrad machines: I have WC2 up and running on a 2386 using DOS 5. I have all my expanded memory configured as extended, so I don't get any extra effects (replays, etc) and I'm using a boot disk containing Autoexec.bat files (with just a prompt line) and Config.sys files (with Files=30 and Buffers=30). Maybe this will be of help to anyone still confused.

Amstrad owners should *not* buy Ultima VII. I purchased it some time ago, looking forward to months of role-playing heaven, but I was sorely disappointed. The game loaded, but invariably locked up after the opening sequence (where you exit the moongate).

After many phone calls to Mindscape (and a change of game disks) they finally announced that it was a compatibility error, the game not working with the Amstrad machine. Was I annoyed? Yes! Was I given compensation in the end? Yes, a copy of WC2 and Special Ops 1, but I'd rather have played Ultima VII!

Matthew Muir
Swindon

Club together?

I think that a magazine that has a good reputation and a growing number of readers like yours should at least have a club. A club where members could meet, exchange ideas, make new friends, and even boast about their achievements in computer gaming! Who knows what wonders it could do?

Are there any plans to interview other great game designers like Richard Garriott, Chris Roberts or even Jordan Mechner?

Lastly, could someone please enlighten me on the meaning of QED?

Riza Musanwir
London NW11

Interviewing game designers has always been part of our plans and we've got a quite a few lined up for future issues. QED stands for 'quod erat demonstrandum', and translates from the Latin as 'which was shown'. Such are the benefits of a classical education!

Unprotected

Recently we were robbed, and although the PC remained safe, several games were stolen. For most games on my hard disk, this was fine, but I have three games which need a manual to run, Eye of the Beholder 1 and 2, and PGA Tour Golf.

With the games and the manuals stolen, I can no longer load PGA and am stuck when trying to get from one level to another on the Beholders. Therefore, I ask, is it possible to obtain manuals for these games from the relevant companies when I cannot prove that I bought the software, which is obviously what the manual protection systems are trying to do.

I also might add that these protection systems are not very effective. It seems very easy to me to be able to get hold of the few words from the manual that are used to protect the game. The key disk is also a very annoying method. Fortunately, the one key disk game I did have was not stolen.

I have managed to think of a better way to protect a game. Although it is not as effective as other methods, it would cause less bother.

Almost every game has a set-up program for the purchaser to fill in their machine's capabilities and their playing preferences. It would be unlikely for two people to have the same tastes and the same computer. Therefore it would be possible to cause the set-up program to have a protection system, and every time you wish to change anything in the set-up, then you would have to use the manual, or key disk, or code wheel protection system.

This would make it a lengthier process to get a list of words and may be just as effective at keeping a game safe.

Geoffrey Dallimore
Cambridge

Lost Empire

1. Quite a long time ago, I played a war game on my friend's PC called Empire. I've been looking for it ever since, but with no success. Do you know who published it?
2. Are expansion cards available to give my (sad) Amstrad PC2086 a second Com port?
3. Whatever happened to XGA?

Roddy J MacLeary
rjm1@st-andrews.ac.uk

Empire is published by Interstel, a development company based in Houston, Texas. Its products used to be distributed by Electronic Arts, but not any longer, and I believe the company has no ongoing UK distibution contract at the moment. I can, however, give you Interstel's phone number, if you want to pursue inquiries: it's on (010 1) 713 946 7676.

You shouldn't have too much trouble getting another Com card for your machine. First, find yourself a competent dealer which sells PC components and ask for a standard serial Com port. Mention that you already have a Com1 port fitted, so that you ensure you get a card which can be fitted as Com2.

XGA, the eXtended Graphics Array, is an IBM development, offering a maximum of 1024 x 678 resolution and 256 colours.

It requires a 386 or 486, and may well be yet to happen – IBM has made the technical specs available to independent manufacturers.

The ideal game

I am relatively new to the PC gaming world and so am bewildered by the choice of software titles to choose from.

At present, I am solely interested in a fantasy/RPG/adventure format. I have a pretty good idea about what is on offer but have no idea which is the best title for me.

Ideally the game I want would have the following: 1) very well presented, graphically; 2) highly imaginative; 3) pretty good sound; 4) an extremely large playing area; 5) good character interaction and development; 6) a reasonably long playing time (weeks, if not months!).

The system I have at present is a 25MHz 386SX with 2Mb RAM, a 1Mb SVGA graphics card, 14" Multisync monitor, Microsoft mouse, and 16Mb of hard disk space under SuperStor With this in mind would it be possible for you to advise on the title(s) most suited to my above specifications?

P J Mossman
Rustington
Sussex

At the risk of confusing you further, I could direct you to the Fantasy/RPG games in this month's Top 100 Games supplement. More specifically, I think that for character interaction and imagination, you could look at Sierra's long inventory of adventures, for a combination of imagination and role-playing (and depth of plot) the Ultima series from Origin — particularly the Worlds of Ultima sidekicks, such as Savage Empire or Martian Dreams. Lucasfilm's tour de force, Secret of Monkey Island 2, fulfils all of your criteria although the setting is humorous and relatively down to earth rather than fantastical. This little lot represents the elite in terms of adventures, though none of them will leave you with a great deal of free space on your hard disk.

I have to say that I don't really like making specific recommen-

dations because people's tastes are so very different, and even with the detailed list of requirements you gave above, I refuse to be responsible if you take up any of these suggestions and find that they are not to your liking.

Two's company

It's great to see a large number of PC games now being released with excellent 256 colour VGA and superb sounds, but how many of them are offering an option for players to play simultaneously?

There are a large number of flight simulators and role-playing games available, which are designed for only one player.

I would like to buy games which I can play alongside my brother, since I feel that it is far more entertaining to cooperate closely with someone else in order to beat the computer.

The few games which do offer simultaneous action are Golden Axe, Double Dragon, Blood Money and Cool Croc Twins. I would like to see far more games like these being produced, especially the classic Bubble Bobble, which appeared on other formats.

Irfan Beg
Wembley
Middlesex

A quick look at our cover story feature on this very subject (PC Review, Issue 9) adds a few more games to your list as being "head to head compatible": Hard Drivin', Populous, Powermonger, Sim City, SimEarth, Knights of the Sky, Global Effect, Falcon 3.0 and Super Tetris. On the whole, though, I agree with you: playing games linked to another PC is a whole new experience, and the more games with this feature, the better.

Missing quarterback

My favourite sport and pastime respectively are American football and computer games. I was therefore overjoyed to see your review of NFL Football in Issue 10, but disappointed to realise that, like me, you still believe John Madden's Football to be "legendary". My simple question is, therefore, when can we expect to see John Madden for the PC?

A Bennett
Hesketh Bank
nr Preston

John Madden should be available for the PC by the time you read this.

Trouble in Stor

I read the letter headed Hard Disk Compression from Duncan Bramble of Cheshire in Issue 11 and noted the use of SuperStor with Wing Commander 2. I have had some very troublesome nights with WC2 and SuperStor, because earlier versions of this utility did not like WC2 at all. In fact, I managed to trash the whole of my hard disk while trying to compress it. We got hold of one of the new versions of SuperStor that is supposed to work with WC2, but then we got to the problem of memory.

WC2 needs 583K of free memory, as you have stated, but the TSR

Star*letter*

Micro Channel advice

In response to those troubled souls who have Micro Channel computers like mine, I would like to shed some light on the confused topic.

Micro Channel architecture is an advanced computer bus that works more reliably and faster than an ordinary bus. One of its main advantages is it allows the computer to be automatically configured from diskette, which means the end of DIP switches. However the price paid is that more complex logic chips have to be put on the expansion cards and thus the cards are more expensive.

Most of the popular sound and joystick cards are available in MCA form. MCA joystick cards are common at about £40-£50 and MCA Sound Blasters are available for £159 from Sierra-on-Line. I have also seen the MCA Sound Blaster Pro advertised for £209 in computer press adverts, even though I can't confirm that it exists. MCA Ad Lib cards are uncommon but do exist and MCA Ad Lib Gold cards were scheduled to be released later in the year.

MCA Roland cards are around, but expensive. The way I bought my Roland, which is through the American Sierra-on-Line (direct from America), is the cheapest I've seen at £325. It is fully LAP1 compatible.

The two things to remember are never to pay recommended retail price, and, if you can take the hassle, to buy direct from America. This way you will get the hardware at roughly half the corresponding cost in England.

Here's some information to R Goodliff about the PS/1 sound card. The PS/1 sound card is OK. It gives three or four channel sound plus a MIDI interface (OK) and an 8-bit digitised output currently, but only Sierra-on-Line and a few others support it in their games (I think it is used in the latest versions of Prince of Persia). If you phone up IBM you might be able to get a driver for the digitised output for Windows 3.1. You will notice the difference if you buy an Ad Lib and of course it is one of the standards. Sierra-on-Line was doing a special offer last month with Ad Lib cards for £19.99. He could phone them up and see if they have any left.

Neil Cobb
Pinner
Middlesex

that you need to run SuperStor takes up 40K and unless you use magic, there is little chance of you having 583K left after that, even with DOS 5. So, in the end, we made a partition in the 40Mb drive and made it into two 20Mb drives, one compressed, and one not. WC2 only takes up 15Mb of hard disk space unpacked with VGA and PC speaker selected.

Edward Newby-Robson
Market Deeping
Peterborough

Just a note, Edward: I've passed the rest of your letter, not printed here, to Q&A's Mike James, who is, even now, investigating various EMS drivers for you (incidentally, he says it's an excellent question!).

Monkeying around

I am writing to you after reading A.R. Chappell's letter in Issue 10 of PC Review.

I recently bought the Sound Blaster package from Evesham Micros, which included a Sound Blaster card, ZY-FI stereo speakers and The Secret of Monkey Island 2. The Sound Blaster and speakers are excellent, giving incredible sound quality and atmosphere in games. I was not impressed with Monkey Island 2. It appeared to install correctly and loaded. But when I came to save a game my computer hung. Also, when I went into the second or third building, the game dropped out leaving me with a message like "Script 3482674 not in room 423956". I obviously thought this was a problem with the disks so I sent them back and got a new set.

After a second installation the same thing has happened. My dad suggested that Monkey Island 2 was writing directly to the hard disk, by-passing the BIOS. This would normally work, but sitting in memory was SuperStor, the disk compression program. By writing to the disk directly it had by-passed SuperStor and so perhaps had used part of the disk allocated by SuperStor for something else. After this I formatted my hard disk, giving myself drives C: and D: On drive D: I put Monkey Island 2 and not SuperStor. On drive C: I put SuperStor. After this, Monkey Island 2 worked perfectly, giving me lots of enjoyment.

I then bought Wing Commander and it started to hang not long after starting. I remedied this by also putting it on drive D:, away from SuperStor and it now works perfectly.

Not long ago Superstor started to tell me that there was something wrong with my hard disk. Because of this it made the disk read-only and nothing would work. After a while the SuperStor disk utility program found the bad files and erased them. The supposedly bad files had been perfect the day before, so I still do not know what was wrong. They were not system files, just applications like Deluxe Paint and Turbo Pascal.

This was the last straw. I removed SuperStor, and banished it to the cupboard. Now all applications work perfectly. Unless I can get a guarantee that the new version of SuperStor has not got these problems, or I can get an upgrade cheaply then I will not be buying it.

The computer I use is a Reeves 80286 running at 16MHz with the enhanced Neat Chipset and has 1Mb of RAM. Is it possible for me to get Ultima Underworld to work, as it looks brilliant.

Alasdair Coull
Peterhead
Aberdeenshire

We'll try to look at SuperStor in some depth in the near future, since it's obviously causing some problems. On the Ultima Underworld front, I have bad news, I'm afraid: you need a 386SX minimum.

Cheaper PCs

I draw your attention to machines which seriously undercut the games packages you reviewed in Issue 8. Both Olympic and Austin have 40Mb colour VGA-equipped 386SX machines selling at under £600, plus Vat. The Austin First Station is £590 but would need a games port/sound card, I suppose. The Olympic is better value, giving SVGA and 2Mb RAM for £599. Both machines include DOS 5.

Another neat offering is the Multiplex Booksize. The system box is minute but still manages to pack in a 386SX processor 2Mb RAM, 85Mb hard disk, 512K SVGA, games port and a single slot (for your games card/SCSI CD ROM port). There is a choice of compact or full-size keyboard. For £795, plus Vat, you also get the 14" colour monitor, DOS 5, Windows 3.1 and anti-virus software as well as a five year maintenance plan.

One way to obtain cheap games is to make use of remaindered stock offers. Catalogues like Misco have three-game bundles for £39.95. Sierra currently has half-price or less offers on non-VGA games which it is discontinuing. Sierra will only supply 256 colour VGA games in future, as I expect you know. It could be cheaper to buy the discounted old game and send off for a VGA upgrade than to pay for the new VGA version.

I hope this encourages you and your readers to be enterprising. May I suggest a monthly challenge to seek out and disseminate the best value? Rather than lamenting the expense of hardware and software I am convinced that it is better to do something positive. Of course, when you have found that too-good-to-miss bargain, you have to spoil the

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COMPETITION *WINNERS*

WORD-LY WISE (Issue 10)

A right thumping response to this competition, as thousands of you vied for the chance to win an Amstrad 4386SX Family Pack PC plus loads of games-orientated trimmings. With 20 copies of new educational software up for grabs as well, there were plenty of opportunities to win.

First out of the hat with a full complement of correct answers, and therefore the winner of the Amstrad PC is Neil Dew, of Walsall, West Midlands. Well done, Neil; we'll get the Amstrad out to you post haste.

Close behind him were the following runners-up, who will each win the title of their choice from the Europress Software ADI range: Alex Powell, of Newcastle; K R Clifton, of Brede, East Sussex; Mr R Krishnan, of Warlingham, Surrey; Mrs Jennifer Ferguson, of Wick, Caithness; Mr Glean Elie, of London W11; Katie Mann, of Surbiton, Surrey; Mr M Bourne, of London SE4; Andrew D Hislop, of Rochester, Kent; T Soles, of Windsor, Berks; David Rose, of Sheffield; Juston J A Smith, of Chipping, nr Buntingford, Herts; Mike Williams, of Leighton Buzzard, Beds; Mark Gillard, of Evesham, Worcs; S Hastings, of Salisbury, Wilts; Brian Campbell, of Aberdeen; K Ford, of Walderslade, Kent; Rudi Davidson, of Maastricht, Holland; D J Colclough, of Knypersley, Stoke on Trent; Clive Hopkins, of Eastleigh, Hants; and Jonathan Whitfield, of Liss, Hants.

The competition itself may not have been National Curriculum approved, but the vast majority of you had little trouble filling in the blanks to form ADI-associated words. Falling standards, huh?

Anyway, in case anyone's still stuck, the answers were as follows:

1. French goodbye: ADIEU
2. Being exposed to this could be deadly: RADIATION
3. What you might do with Marmite or muck: SPREADING
4. Coming in fits and starts: SPORADIC
5. Like this puzzle? Or getting pleasure from pain: SADISTIC

dream by working out that you a) you can't afford it and b) it will probably be £150 cheaper elsewhere in six weeks.
Christopher Bridgman
Windsor
Berks

Double your speed

Firstly, thank you for publishing our article on upgrading the IBM XT with the NEC V20 chip, for which I have had lots of inquiries regarding the upgrade of Amstrad PCs. An increase in speed, nearly double, to 8MHz can also be achieved by replacing the CPU with the NECV30 as the 8086 processors are 16-bit.

The models capable of this upgrade are the PC1512, PC1640, PC2086 and PC3086, which again are available from ourselves at £19 plus Vat.
Steve Jacobs
SS Computers

Seen through Windows

I have just read the letter you published in the PC Review Issue 10 from Mr Lavis concerning Amstrad PC 2000 machines and Windows 3.x. Since I have tried to install Windows 3.0 on my PC2086, I know what he's talking about.

Now I realise that it sounds ridiculous installing Windows 3.0 on an 8086 but nevertheless I was told it could be done. Foolishly thinking I'd be running Windows in no time I started my trusty Amstrad up, set-up disk in hand. Two months later, I was running Windows in what I can only term neo-monochrome on a colour VGA system.

The root to all Amstrad 2086/Windows 3 evil lies in that, 1) the Amstrad mouse doesn't work (which is easily fixed), and, 2) the machine sickeningly hangs before set-up's graphical stage due to the graphics driver you've selected (not that it matters which one you choose).

Firstly the mouse driver is easily fixed without an expensive telephone call, simply by copying Mouse.drv from the original Windows 2 build disk (this came with the machine) to a blank disk, and selecting it during set-up by choosing "Others – Requires Manufacturer's Driver" in the Mouse section.

However, fixing the VGA graph-ics driver is far more complicated and these steps must be followed:
1) Copy IBMP250.drv from the Windows 2 Build disk, and Vgalogo.lgo from the Windows 3 Disk two to a blank disk;
2) Using the blank disk, rename Vgalogo.lgo to IBMPS250.drv;
3) Type Copy con IBMPS250.grb, then press space followed by ^ Z (Ctrl-Z), and Enter. This should create a new file;
4) Select "Others" from the Display section in Setup and use IBM Personal System 250 display from Drive A:.

Although this does work, it is only to a certain extent since all the icons appear in black and white, and the title screen is purple!

And Mr Lavis thought he had problems! Anyway my only snag now is with Mouse.com using DOS-based programs, though it refuses to work with PFS: First Publisher in VGA mode as well as with MS-DOS 5 Shell.

Also, people wishing to upgrade their PC 2x86 systems might have some luck at a computer auction. I saw a 2286 motherboard for £20 at one auction a few months back. Unfortunately you have to take an auctioneer's word for it that the merchandise is in working order, since there is no way, or at least I can't think of a way, to test a motherboard.

By the way the graphics software CompuShow on the August cover disk was great , and it worked a treat on the Amstrad's built-in Paradise SVGA card. No matter what anyone says about Amstrad PC2000s, they're pretty classy machines, even if they aren't Cray Super Computers.
Peter White
Runcorn
Cheshire

This tale of endeavour in the face of adversity sounds as though it should have a"Don't try this at home" sticker attached to it, if only for the time and effort involved. I mean, isn't it all painfully slow?

Windows 3.0 wasn't intended to be run on an 8086-based PC, and Windows 3.1 simply won't run on it, so that's not worth trying at all (for more on this subject, see this motnh's Q&A pages).

Space search

I wonder if any of your readers can help me. I am trying very hard to obtain a game called Space Max by FASA International, which, I'm told, is now defunct. The game is about building space stations which I've always wanted to do since a small kid. If anyone can help they can write to me.

Mrs S Shwe
125 Mildmay Road
Chelmsford
Essex CM2 0DS

Carrier on board?

I was interested to read your review of Carrier Strike in Issue 10. I have a board game called Carrier Strike, published in 1981 by Simulation Games. From your description of the scenarios and game mechanisms, Carrier Strike is clearly a computer version of the board game.

Are the original designers, Meic Harries and Ian Lewins, acknowledged in this updated version and is there a link between Strategic Simulations Inc and Simulation Games?

John Hastings
Bretton
Peterborough

Even so, SSI's representative in the UK, Bob Malin, assures us that Carrier Strike the PC game is a computer original and not based on a board game. So, no link, I reckon.

Jungle fever

Firstly, well done for putting Jill of the Jungle on to the Issue 10 cover disk of your magazine. It seems hard to believe that it is a shareware game. The only problem I have is with the ordering section of the program: the address and prices of other Epic games available are all American. What I would like to know is, should I write to this address or is there an equivalent address closer to home? Please reply, as a second or even third edition of Jill's adventures would really please me.

Secondly, you seem to show a lot of Goldstar products in your magazine (such as the CD-ROM feature in Issue 5 and the games packages in Issue 8). Is this because you think Goldstar computers are quite good or do you think the oppo-

site of that? If the reason is the latter then I'd like to say – I have a puny GT212 Goldstar 286 which trots along at 12MHz and I am more than satisfied with it.

Oh, and also well done for presenting the readers of PC Review with European Championship Soccer. However, I agree with Martin Emery's comments (Letters, Issue 10) about the sound on it!

Nigel Clarke
High Wycombe
Bucks

There is a UK registration point for Jill of the Jungle: contact Nildram Software on (0442) 890303 for details. The price, incidentally, is £19.95 plus Vat.

I have nothing at all against Goldstars; the company has gone to some lengths to produce low-cost machines aimed squarely at the consumer market, which are the particular types of PC we've concetrated on reviewing so far.

Not in the library

I am having trouble locating a source of public domain software. I read in your magazine that it was available from libraries but the main libraries where I live and study (Sheffield, Nottingham, and Newcastle-Upon-Tyne) do not distribute PD and do not know where to get it from.

Bearing in mind I do not own a modem or know someone who owns one, how can I obtain a copy of a PD program that I only know the title and the author of?

Angus Wright
Mansfield
Notts

Wrong type of library, I'm afraid, Angus. Public domain and shareware companies hold 'libraries', or catalogues, of all their current available titles – and PD and shareware programs will often be available from more than one.

Try Shareware Marketing on (0297) 24088, or Advantage on (0242) 224340, or any of the companies with products in our Shareware Reviews section, to see if they have the title you need – if not, they may be able to point you in the right direction. You won't need a modem; the disks will be sent by post.

ON THE SPOT

PC Review arranges regular visits to the UK's top PC companies, taking with us a selection of readers who have filled in the form below. This gives you the chance to talk to various movers and shakers within the industry: interview them, ask them about their PC plans, how they design, write, produce their games, what they hope to be doing in the future. The exact nature of the visit, and the degree of formality, depends on the companies concerned, but you usually get a chance to see some sneak previews of forthcoming products, meet the programmers, and have a guided tour of company HQ.
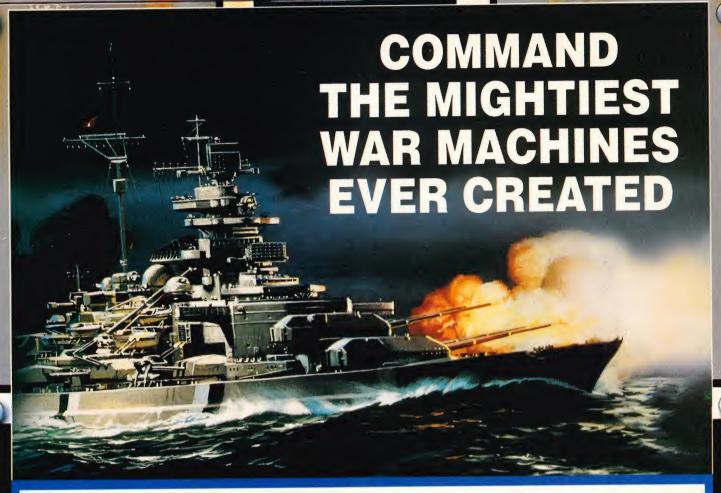
A full report of the visit then appears in a later PC Review – useful for those who didn't go, because they'll read the answers to the questions you asked. In other words, the issues which you, the readers, care about, rather than we think is important.

We're currently planning our trips to Psygnosis and Mindscape, so if you've already applied, you may be hearing from us soon. If you haven't applied yet, get that form sent in quickly.
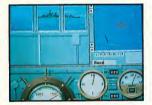
If you want to take part in an On the Spot visit, fill in the form below and send it to: On the Spot, PC Review, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

Note: we don't take very many people at any one time, so that if selected, you'll have every chance to have your say. Because of this, the places get filled quickly, but we'll be doing return visits to all the most popular companies. If you miss out the first time round, sit tight, because another visit to the same place will come up and we don't throw your forms away.

Name...
Address..
....
....
....
Daytime tel no:...
Evening tel no: (leave this blank if you prefer) ....
Age: Under 16 ❏ 16-25 ❏   25-40 ❏   Over 40 ❏

NB if you are under 16, please get your parent or guardian to sign this form as well giving their consent for you to take part.

Which company would you like to visit?
Domark ❏ Virgin ❏ Mindscape ❏ Bitmap Brothers ❏
Psygnosis ❏ Other (if applicable)
....
Any particular reason for your preference(s)?
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Send this completed form, or a photocopy, to
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PC Review November 1992

COMMAND THE MIGHTIEST WAR MACHINES EVER CREATED

When you want a state-of-the-art simulator with *real* true to life power and realism - you need to play;

GREAT NAVAL BATTLES

Its unique superior graphics and animation will *actually* put you on the bridge of the great German or British battleships and cruisers of World War II.

Choose the CAPTAIN'S VIEW and steer majestic ships like the BISMARCK, go to full power and watch the action on the screen as 42,000 tons of steel respond to your command. Listen as dramatic sound effects re-create the roar of guns as you fire them. Watch the shells splash in the distance or explode on target. See the flash of enemy guns and feel your ship vibrate as she's hit. Take command even through the toughest North Atlantic storms!

You can also watch the action from the FLEET VIEW, an eagle's-eye look at the individual ships of a task force, or the GRAND ADMIRAL VIEW, a strategic display of your entire navy and all visible enemy vessels on a map of the North Atlantic.

Fight the entire campaign, mini-campaigns or individual battles as the British navy seeks to protect her transport ships from German predators. All the action happens in real time or you can compress the scale. There's even an instant replay feature.

Other original features boasted by GREAT NAVAL BATTLES are its extensive online ship data and specifications, detailed damage report - by deck and visually stunning *graphic animated sequences* which will make you believe that you are actually on board! All combining to heighten the enjoyment of this unique historical drama.

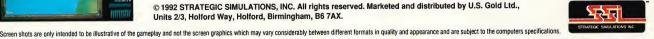## GREAT NAVAL BATTLES
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You can even use the Leisure Station for business applications like word processing, spreadsheets and databases.

intel inside

Electronic Arts acquires Origin

TWO OF THE MOST prestigious names in PC games development joined forces last month, as California-based Electronic Arts acquired Origin Systems of Austin, Texas. The $35 million deal, which was carried out through a complex share swapping arrangement, will leave both companies carrying on as separate operations, but should result in shared resources and expertise.

Although the two companies will continue in their separate bases, the new arrangement will see two of Origin's senior names become involved in the management structure at EA: Richard 'Lord British' Garriott as executive producer and Robert Garriott as vice president. Commenting on the deal, EA's president Larry Probst says, "Origin has proven, in its nine years of existence, to be a great creative force with unique products. The acquisition of Origin by Electronic Arts is an excellent fit."

For Origin, founder Richard Garriott had this to offer: "We believe that our combined companies have an even greater advantage than ever over the competition."

Origin's Strike Commander: staying at Mindscape for the time being.

As far as the European operation goes, Origin will continue to sell its products through Sussex-based Mindscape until May of next year. Origin's European staff will then move to Electronic Arts' base near Slough, Berkshire.

Origin's European product manager, Jennie Evans, sees the deal as a great step forward, pointing out the two companies' complementary catalogues and saying: "The backing of Electronic Arts with its huge resources will give us the strength we need to make an even stronger push into CD development - and then on towards our ultimate goal of virtual reality."

For further information, contact Electronic Arts on (0753) 549442, or Origin (at Mindscape) on (0444) 246333.

A drop in the Ocean

ALTHOUGH it has previously been known for publishing some of the Maxis catalogue in Europe, software giant Ocean has taken its first serious step into the PC market in its own right, with a range of budget-priced MS-DOS games on its Hit Squad label.

The firm plans to release nine titles between now and January 1993. All the games have been previously released at full price: by Ocean itself, Accolade and Domark.

The full line-up is as follows ...
● October: Domark's Pictionary and Accolade's Test Drive II.

● November: The Simpsons and Terminator 2 – Judgement Day (both from Ocean) and Domark's Trivial Pursuit (above).

● December: Accolade's pool simulation Rack 'Em and Pit-Fighter from Domark.
● January: Ocean's WWF Wrestlemania and Steel Thunder from Accolade.

All of the games in the new Hit Squad range will be available on 3.5" disk only, variously priced at either £9.99 or £12.99. In addition, the Hit Squad is also repackaging the highly successful Fun School series of educational programs, priced at £9.99 apiece.

For further information, contact the Hit Squad on (061) 832 6633.

CD-ROM - The collection grows

FOLLOWING LAST month's announcement of budget CD compilations and the release of the Grolier Illustrated Encyclopaedia v3.0, Mindscape is to expand its UK compact disc collection still further.

Sherlock Holmes Consulting Detective (reviewed in Issue 7) is a unique multimedia game which incorporates more than 90 minutes of video footage into its mystery-solving gameplay.

To solve the three separate cases, the player can step back into a cinematic reconstruction of Victorian London to visit important scenes and locations, and question notable characters of the period.

The setting was created using 25 custom-built sets, while more than 70 costumes were used to dress the actors for over 50 speaking parts. Officially licensed by Sir Arthur Conan Doyle's estate, Consulting Detective is available now, at £59.99.

Further optically-stored food for thought is dished up by the enhanced multimedia version of The Chessmaster 3000 (the floppy-disk version of which was reviewed in Issue 4).

Featuring the same standard of game, bells and whistles as the original, this package makes use of the extra memory provided by CD technology to include an animated tutorial, audio help and even a series of classic games with spoken narration. All of this enhanced strategy comes on a single CD, priced at £44.99.

For further details on these, and other Mindscape CD-ROM titles including the World Atlas and Mavis Beacon Teaches Typing, contact Steve Hillier on (0444) 246333.

full-motion video (FMV) and stereo sound, the machine is a direct rival to Commodore's Amiga CDTV and the Philip's CD-i player. Tandy chairman John Roach claims that the new machine is "a computer for those people who always wanted a computer at home, but maybe didn't know why." More details in next month's PC Review.

NEXT YEAR'S IDEAL HOME SHOW is to feature a separate computer games exhibition within its usual mix of state of the art wallpaper and kitchen appliances. The Ideal Electronic Games Show will take place at Earls Court between March 25th and 28th.

ERIC CHAHI AND Frederic Savoir, the duo behind Delphine's successful arcade adventure Another World, have decided to place their next project, Heart Of Darkness, with Virgin Games. The move will result in an expansion for the team.

COMPUTER GAMES retail chain Microbyte, which has only recently been saved from extinction, is to make PC games a prominent feature of its new-look operation. The firm, whose shops are mainly based in the North of England, has been encouraged to make this move by the strong sales of PC games through its branch in London's Oxford Street.

NOT CONTENT WITH its attempts to kill off the 386 PC (see elsewhere on this page), Elonex has also decided to join the likes of Tulip, Commodore and Brother by sponsoring a football team. The chosen 11 are First Division hopefuls Southend United, chosen, according to Elonex managing director Israel Wetrin, because they're "serious contenders for the top." The two-year deal is worth £500,000.

FRIEND OF BIG EARS and perennial children's favourite, Enid Blyton's Noddy is to make his computer debut in a new educational program, aimed at children from three years old and carrying his name. Timed to coincide with the relaunch of the character on BBC TV, Noddy's Playtime should be in the shops well in time for Christmas.

The 386 is dead

THE PACE OF CHANGE in the PC hardware world continues to snowball, as Elonex has just announced the death of the 386 standard – as far as its machines are concerned at least.

Until further notice (which, on current form, could arrive at any time) Elonex's 'entry-level' machine is a 20MHz 486SX machine, the PC-420XM.

For a recommended price of £795 (plus Vat), this configuration offers 2Mb of RAM, a 50Mb hard drive, low radiation SVGA monitor, mouse and Windows 3.1 and DOS 5.

To misquote Mark Twain quite dreadfully, reports of the 386's death may have been greatly exaggerated, however, as a brief look through the entry level machines from a number of the top PC suppliers shows that they are all still producing machines based around the 80386 chip.

● Compaq's bottom of the range model is the ProLinea 3/25zs Model 40. Equipped with a 386/25SX processor, the machine sports a 40Mb hard drive, colour VGA monitor, DOS 5 and a price tag of £940.

● Commodore opens its bidding with the SL386SX-16. Selling for £739, this comes complete with 40Mb hard drive, colour VGA monitor, DOS 5 and mouse.

● Dell's lowest configuration is the System 325sx, which, for a price of £999, includes 4Mb of RAM, a 50Mb hard drive, colour VGA monitor and mouse.

● Ambra's Sprinta (above) is its most basic model. Featuring 4Mb of RAM, a 40Mb hard drive, VGA monitor, a mouse, DOS 5 and Windows 3.1, this unit sells for a staggeringly low £575.

All of the prices quoted above are exclusive of VAT. For further details, call the following: Elonex (081) 452 4444; Compaq (081) 332 3888; Commodore (06288) 770088; Dell (0344) 860456 and Ambra (0800) 386386.

Alone in the Dark is a spine-chilling graphic adventure from Infogrames in which you must outwit the spirits in a haunted house. Due for release in November, Alone in the Dark should cost £35.99.

Virgin's Seventh Guest, notable as one of the first games originally developed for CD-ROM, and looking graphically spectacular even now, is now planned for release just after Christmas, with, as yet, no price confirmed.

Take the role of El Dorado in Inca from Coktel Vision – nothing to do with the soap apera, but a graphic adventure based on the Inca civilisations of Central America. Expect to see it next month, priced at £39.99.

Stunt Island: The Flying and Filming Simulation is the latest from Disney Software, with 10 different aircraft and over 150 set design objects in a game Disney unfortunately claims "breaks new ground" (ouch!).

Geoff Crammond's Formula One Grand Prix, with its 16 mapped Grand Prix circuits and 26 independently controlled cars is now set for release early next month. Expect a price of around £44.99.

Ween: The Prophecy is a mediaeval adventure from Coktel Vision, full of sorcerers, grotesques, and characters with names like Kraal and Okhram, and Ween, of course. Due out this month at £34.99.

The Might & Magic saga continues with Clouds of Xeen, another auto-mapping RPG from New World. Promising more digitised speech and graphic interludes, the program will require 2Mb of RAM.

Origion's Privateer is a follow-on from the Wing Commander series, with war still raging against the Kilrathi, and new starships, new weapons and bartring methods to master. Expect a release early next year.

Ocean offers relief

STEPHEN FRY, Lenny Henry and Rowan Atkinson are just some of the many famous comedians who will soon be bringing their own particular brands of humour to PC gaming, as Comic Relief gears up for its next Red Nose day.

Working closely with Ocean, the Comic Relief comedians are pitching into the development of Sleepwalker, a game which will go on sale prior to the major charity event scheduled for March 12 next year.

The game is an arcade affair, featuring the exploits of a loyal dog who is attempting to save his young sleepwalking master from a series of hazards. The game is already full of amusing touches, but the Comic Relief gang believe that they can still inject a little more humour into the proceedings.

When the game goes on sale in February next year, it's hoped that everyone in the development and retail chain – programmers, distributors an shop owners – will donate a cut in their profits to the Comic Relief cause. A target of £500,000 has been set.

Speaking for Ocean, chairman David Ward says, "With computer games becoming more and more mainstream, we thought that we could make a contribution on a grander scale than we have with previous charity efforts. We're sure that the input from Comic Relief will make this a truly exceptional game and we hope that everyone will get behind us."

For further information on Sleepwalker, contact Ocean on (061) 832 6633.

Sticky moments for Suncom

A NINTENDO-STYLE control pad and a joystick that's "so good, you won't believe it's real" are just two of the newcomers in joystick specialist Suncom's latest catalogue.

Featuring a unique 'control disc' for direction and a multi-purpose set up of five fire buttons (which includes two separate auto-fire switches), the Command Control is introduced primarily to benefit those who've made the massive leap from Nintendo gaming to the PC.

Priced at £19.99, the CC may also interest the PC-dedicated arcade action addict, looking to get that little bit more out of Magic Pockets or even F-15 Strike Eagle II.

The FX2000 may present a more

traditional joystick style, but even this has its own peculiarities, including an 'ergonomically placed' grip (which basically means that it leans forward slightly instead of standing erect), which can be adjusted laterally to suit both left and right-handed players.

Also featuring switchable fire buttons, autofire and a throttle control, the FX2000 has a two-year warranty and will set you back approximately £24.99.

Other newcomers to the Suncom range include the £29.99 Crystal (a clear mouse) and the G-Force Yoke (priced at £49.99). Suncom's UK office is based in Stroud, and can be contacted on (0453) 753565.

Titus goes out on a budget

FRENCH SOFTWARE publisher Titus has joined Ocean (see page 20) in developing a budget label to re-release its older full price games on. Called Fox Hits, the new label will open its account with the release of 12 titles before the end of November.

The first games scheduled to appear – all of which were previously released on either Titus's own label, or as part of its previous affiliation with Disney – will be Crazy Cars II, Fire and Forgets I and II, Wild Streets, Arachnophobia, Offshore Warrior, Dick Tracy, Duck Tales, Galactic Conqueror, Prehistorik, Knight Force and Dark Century.

Commenting on the range, sales manager Chris Stephens says, "We will make sure that the line-up includes plenty of PC products, because that seems to be a market where a lot is happening at the moment."

Further information on both Fox Hits and the full-price Titus range are available on (071) 278 0751.

Blue Byte in UK

GERMAN SOFTWARE developer Blue Byte was the team behind Pro Tennis Tour, and Battle Isle, published in the UK by Ubi Soft. Now it's going it alone with its first independent release, History Line.

History Line is a strategic simulation of the First World War, including historically accurate data and gameplay pertaining to army, air force and naval warfare. Background information is available on-screen at all times.

History Line should be released within the next month; we hope to carry a review in our next issue.

● For ray-traced graphics and first-person robot-to-robot combat, look no further than Ultrabots, due for a December release on the Electronic Arts label, once again carrying a price tag of £34.99.

● The first product of the tie-in between Electronic Arts and the Games Workshop's Warhammer 40,000 series will be Space Hulk, which is due in January 1993. An adaptation of a 3D board game, this RPG will be priced at £34.99.

● You've had the game of the book and the game of the film ... how about a game of the magazine? Scheduled for a November appearance, Electronic Arts' Car and Driver is the result of a collaboration with America's leading motor magazine, priced at £39.99.

● Loriciel is to offer trans-sexual fantasy in the form of The Entity, a four-level scrolling challenge where you play either hero or heroine. The Entity will be available next month, priced at £39.99.

● The team that brought you Harpoon, Three-Sixty, has found its land legs with the development of Patriot, a one or two player strategy wargame. Offering control of over 2,500 military units and an illustrated weapons database, Patriot will be available soon, priced at £34.99.

● Sierra's latest offering is the sixth in the King's Quest series – Heir Today, Gone Tomorrow. Set on a tableau of six islands, the game incorporates subplots and up to 40 per cent of 'optional' gameplay (a better ending is promised for those who play the game in its entirety).

Chaos breaks out

AS IF YOUR HARD DISK wasn't chaotic enough, Autodesk has released James Gleick's Chaos: The Software, a fractal generating program which allows PC users to explore The Chaos Theory in a 'hands-on' fashion.

The Chaos Theory is a science which offers a way of seeing order and patterns in nature. The most tangible results of this science are multicoloured 'fractal-based' pictures. Autodesk's program allows such patterns to be generated and studied – and the results can even be incorporated into art and presentation packages.

Chaos: The Software incorporates six separate programs: the Chaos Game, the Mandlebrot Set, Toy Universes, Strange Attractors, Magnets and Pendulum and Fractal Forgeries. The whole kit and caboodle is available from Xitan (call (0703) 899321) £49.95.

Mouse loses tail

LOGITECH HAS ANNOUNCED the latest version of its tail-free mouse, the MouseMan Cordless.

Designed specifically for users with "small to medium sized hands", the new mouse is the result of recent findings in the field of ergonomics with the firm claiming that it can reduce strain and fatigue.

Connected to the computer via a radio link-up (on any one of four channels, so that numerous users can work in close proximity), the mouse will work within a radius of six feet from the computer. The mouse is fully Microsoft compatible, and comes with Logitech's own MouseWare Utilities suite of software, allowing the user to produce customised menus, short-cuts and the like.

The MouseMan Cordless is available now, priced at £89 plus VAT. For further information, call Logitech on (0344) 891452.

A star is born

DISTANT SUNS is an astronomical program running under Windows and available from PC Connections.

It will display up to 10,000 stars, and 2,000 galaxies, nebulae and star clusters, and you can change the viewpoint, to see, say, the earth from Mars, or set the program to display stars at a particular time in history. There are also digitised photos in the program from NASA and other space research centres.

Contact PC Connections on (0706) 222988 for further details.

Amstrad makes it seven

FOLLOWING ITS INITIAL moves into the area of PC gaming (with the PC 5286 and PC4386SX bundles), Amstrad has announced it is to continue to target this growing market with the launch of a new configuration, the PC7286 Family Pack.

Priced at £799.99 (inclusive of VAT), the machine consists of a 286 processor running at 16MHz, with 1Mb of RAM, a high density 3.5" floppy drive, 40Mb fast access hard drive, 14" colour VGA monitor, mouse, joystick, Ad Lib-compatible sound card and stereo speakers.

A wide range of software will come pre-installed, including the Amstrad Desktop graphical user interface, Lotus Works (word processor, graphical spreadsheet, database and communications software), DOS 5 and six games: Elite Plus, Steel Empire, Jimmy White's Whirlwind Snooker, Links, F-15 Strike Eagle II and Prince of Persia.
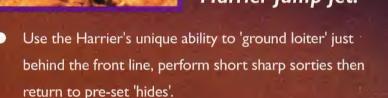
The machine is covered by a one year's on-site repair warranty, plus telephone hotline support. The PC7286 Family Pack is available now from all Amstrad stockists. For more information, call (0277) 228888.
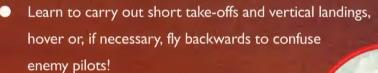
HARRIER Jump Jet

You'll never get closer to the real thing.
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- Execute unique combat manoeuvres and arm your Harrier from the vast array of well-documented weapons.

From single mission sorties to the full blown campaign game, prepare to jump into the most authentic cockpit ever seen in a non military simulator.

Get ready for a new direction in flight simulation!
Harrier Jump Jet from MicroProse

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Unit 1 Hampton Road Industrial Estate, Tetbury, Glos. GL8 8LD. UK. Tel: 0666 504 326.

seldom considered cost of delivery to your door. So that's £999, all in.

The package includes the PC itself, running on a 486SX processor at 25MHz, with an ample 4Mb RAM, a not-so-ample 40Mb hard disk, single 3.5" disk drive, VGA graphics (the advertisements and manual may say super VGA but they mean 800 x 600 resolution, rather than 1024 x 768) Sound Blaster (not, unfortunately, the Pro version), speakers, Microsoft-compatible mouse, Gravis Mach 1 Plus joystick, and MS-DOS 5. The price also includes a 12 month on-site warranty for peace of mind.

The 386SX-based Leisure Station has all of the above except that it comes with just 1Mb RAM.

Rather than bundle a set number of games with the machine, Opus has been plundering Mindscape's catalogue, with 10 titles on offer either from Mindscape itself, or its

The machine's manual explains that removing the cover is a simple task, by releasing a single screw What it doesn't mention is that a label over said screw states you will void the warranty if you do so.

From the outside it looks as though three expansion slots are free. From inside, I can't see any way to fit more than two, unless you first remove the power supply (not advisable). The back of the machine is taken up with the power supply and two rows of expansion slots. That middle row is wedged in-between, and the graphics card on it must surely have gone in before the power supply was fitted.

There are four rows of empty SIMM slots for a RAM upgrade to 8Mb and room in the disk bays for a second 3.5" floppy disk, plus either a 5.25" floppy disk, a CD-ROM drive, or a second hard disk.

Had Opus doubled the hard disk

A 486 for less than a grand

Opus's Leisure Station Plus offers you a 486-based PC plus all the games-playing trimmings for under £1,000. Christina Erskine road-tested the machine to see just how much you get for your money

Opus Technology has long been successful in selling its wide range of PCs to schools, colleges and government departments; now it's joined the ever-growing band of manufacturers eager for a slice of the leisure market and has put together an entertainment package based around its machines.

Now, PC games packages aren't necessarily the cheapest way to buy a PC. Shopping around for the base machine, and then shopping around some more for additionals such as a soundboard, joystick and speakers, you can usually manage something either cheaper or more

powerful than the packs on offer. What you buy is convenience, particularly if you're a newcomer to the market, and you don't fancy formatting a hard disk as one of your very first PC-related tasks.

However, you'd be hard-pushed to match Opus's pricing. The Leisure Station series comprises two machines. Less impressive from a bangs per buck point of view is the basic Leisure Station, a fast 386SX-based PC at £799. Less impressive that is, compared to the 486SX version at £999.

What makes these prices remarkable is that not only do these prices *include* Vat, they also include the

affiliates such as Software Toolworks, Renegade and Origin (see below for list). The buyer can choose any two of these 10 to make up the package. Good news for upgraders, who may already have some of the titles on offer and can safeguard against duplication.

Opus has evidently built the product around a target price, and there are three obvious compromises that it has made: the inlcusion of the Sound Blaster, rather than the Sound Blaster Pro, the 40Mb instead of 60Mb or 80Mb of hard disk space, and also that fact that very many 386 and 486 machines are sold complete with Windows 3.1 these days.

The big advantage of buying your PC together with all its games-playing extras is that everything should arrive installed on the hard disk. Our sample machine came with Life and Death II and Wing Commander II ready and waiting, DOS 5 properly configured, the Sound Blaster all set to roar, but no mouse driver whatsoever. This, I understand, was an oversight.

size, offered full SVGA graphics and put Windows in as well, it certainly couldn't have hit the £999 mark. Given that you get a 486SX PC delivered to your door, with 12 month on-site warranty, soundboard, joystick and mouse and two games, all ready to plug in and go for a quid under £1,000, it seems terribly mealy-mouthed to criticise the Leisure Station at all.

Opus Leisure Station Plus

- **486SX processor at 25MHz**
- **4Mb RAM**
- **40Mb hard disk**
- **3.5" 1.44Mb floppy disk drive**
- **VGA colour monitor**
- **VGA graphics card**
- **Sound Blaster II**
- **Skilitek mouse**
- **Gravis Mach 1 Plus joystick**
- **Two games**
   (choose from Wing Commander II, Aces of the Great War, 4D Sports Boxing, World Tennis Championships, Gods, Legend, Chessmaster 3000, Life and Death II, Mavis Beacon and World Atlas)
- **MD DOS 5**
- **12 months on-site maintenance**

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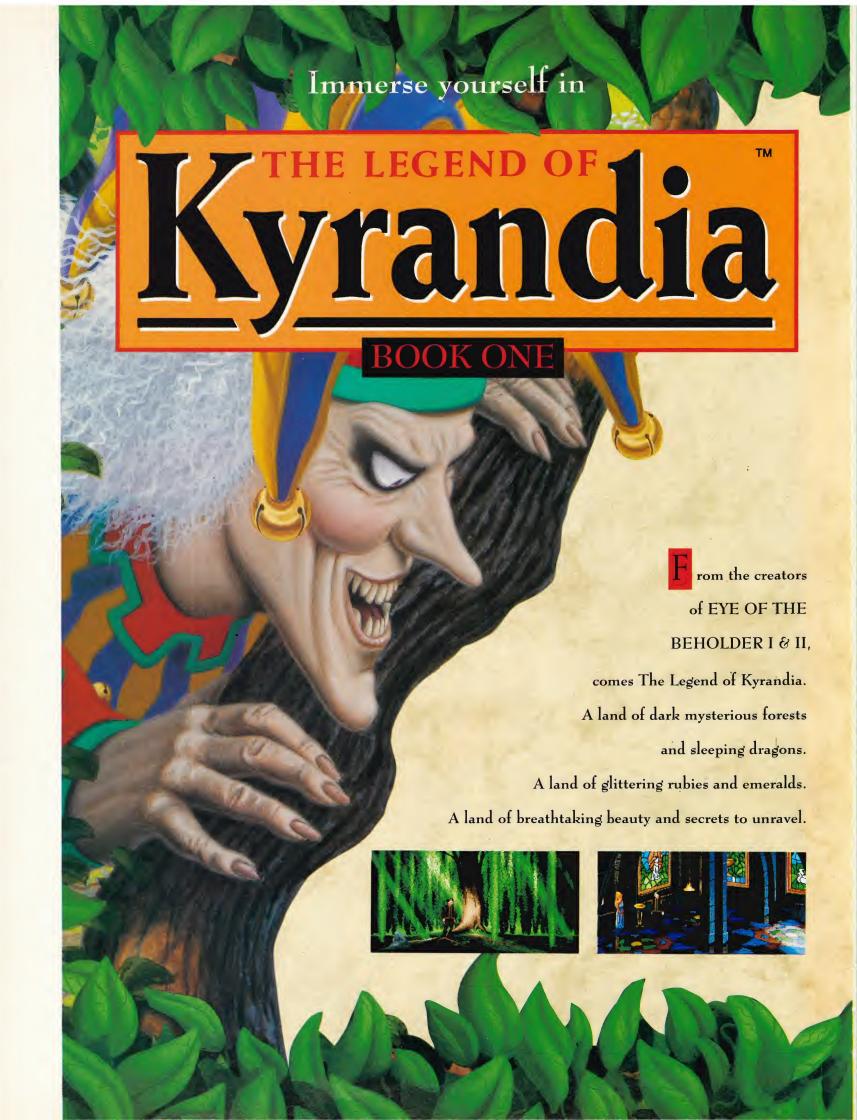
Sounding

The PC's internal bleeper is definitely passé these days: no self-respecting games machine is complete without a sound gadget of some description. Laurence Scotford guides you through the overwhelming choice

The average PC is, by nature, a truly adaptable creature, and nowhere is this more evident than in the evolution of its sonic capabilities. As little as six years ago, you'd be lucky if your PC managed to generate more than a couple of atonal whistles and beeps before deciding to call it a day and giving up on audio output altogether.

All that changed when the Canadian company Ad Lib decided that PC user's ears had suffered enough. A few brainstorms and prototypes later, the original Ad Lib sound card emerged. It was a device that fitted in a spare expansion port and, when connected to a hi-fi, changed the PC overnight from a mewling cat to a nightingale.

Six years on, Ad Lib suffered the universal ravages of recession and are unfortunately in limbo. Those users looking to give their PC sound a much needed boost and their ears a well-earned rest need, however, fear not. There are now enough sound add-ons to choose from to fill a concert hall. In fact the choice is so diverse that finding the right sound device for your needs has become almost as painful a process as playing games without one.
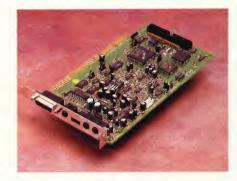
When you read the tests of the sound devices I've included on these pages, you'll see that they basically fall into two types. The first is the sound card that is fitted internally, is quite sophisticated and relatively expensive. To use this type you will have to have a spare expansion
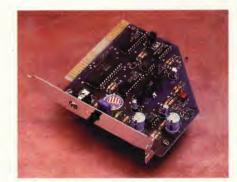
slot and some kind of amplifier and speaker set-up.

The alternative is rather cheaper, but less versatile: digital-to-analogue converters which rely on software to generate the sounds rather than hardware and don't have to be fitted internally. Instead they plug into a parallel printer port, and again connect to an external amplifier, speaker or head-set.

Which of these you choose will depend, of course, ultimately on your budget, the expansion capabilities of your machine, and what purposes you are going to put the card to. If you are planning to use sophisticated sequencing or composition software or perhaps even to connect your PC to an external musical device like a MIDI keyboard, then your choice is all the more restricted. You will have to splash out on an internal type. If, on the other hand, you merely want something that will guarantee to liven up the games you play, then you might well get away with the less sophisticated external type.

A further division is in the types of sound generated by the board. The most common is digitised samples. These consist of sounds that have previously been sampled and stored as files that

Sound Blaster Pro – a truly versatile device, delivering AdLib compatible music and digitised sound effects.

Covox Soundmaster + – AdLib compatibility, but where's the Sound Blaster mode?

Off!

Sound Galaxy NX – it's going to prove a convincing rival for the Sound Blaster cards.

can be replayed by the sound device. The advantage of samples is that the possibilities are unlimited. On the other hand, quality is a bit hit and miss because it depends entirely on the frequency at which the sounds were originally sampled. This type of sound is used exclusively by the cheap, external devices, and frequently by some of the internal cards.

The second type of sound is that produced by synthesised voices. This sound is always good quality, because it is generated internally, but it is, in fact, more limited than sampled sound, because you are stuck with the range of instruments and noises that the device has been designed to generate. You will only find this type of sound provided by internal cards, and some, like those from Roland, use it exclusively.

Sound Blaster Pro
Westpoint Creative
(0743) 248590
£222.00
Without a shadow of a doubt, Westpoint Creative's Sound Blaster cards have now become the most popular sound add-ons in this country. They are certainly getting the widest support, thanks in part to the keen pricing of the development kit, which is well within reach of even the smallest shareware operation. The Sound Blaster Pro, the newest version, is the card that meets Microsoft's Multimedia Level One Specification, and is the most capable of the Sound Blaster range to date, with the exception of the imminent Sound Blaster 16.

As well as sound generation capabilities, you also get a CD-ROM interface in the bargain, and the software and drivers are compatible withthe graphical user interface Windows. Note though that the CD-ROM interface will only directly support one of Creative's own CD-ROM drives.

The advantage of purchasing a board like that Sound Blaster, is that as well as stereo FM voices (these are the Ad Lib style tone generators), you will also acquire the ability to replay digital samples. This extends the range of the board considerably. From software that uses the sampling feature you'll get realistic speech and sound effects – in addition to good music.

What has made the Sound Blaster Pro so popular is the wide range of features packed into one device. In addition to both sampled and generated sound output, it provides you with sampling facilities (you just need to plug a microphone into the socket on the card), and a dual purpose joystick and MIDI port. It also has the best choice of software thrown in, which includes fun items like a talking parrot and a pseudo-Eliza type of psychiatrist program, as well as more useful packages like sampling software.

Perhaps the most welcome addition of all is a MIDI kit comprising of a MIDI cable, and a MIDI sequencer. The latter is perfect for MIDI beginners, as it allows you to combine the Sound Blaster's FM voices with those generated by any MIDI instrument. MIDI stands for Musical Instrument Digital Interface; if you want to know more about the possibilities of MIDI and musical composition on the PC, see PC Review's music series (Issues 10-12).

Despite increasing competition, the Sound Blaster Pro still represents the best value for games players, none of the other cards on offer really manage to match its versatility and features. Also available are the Sound Blaster v2.0, a mono sound card, (£104.57), Sound Blaster Pro without MIDI (£163.32), Sound Blaster 16, a CD quality stereo card (£292.57), Port Blaster, a sound card for portables (£175.07), and MIDI Blaster, a MIDI processor (£351.32).

Sound Galaxy NX
Aztech labs, Inc.
(010 65) 7417211
US$149
The most striking thing about the Sound Galaxy NX is that its manufacturer, Aztech Systems, claims that it emulates just about every other popular low-cost ▶

Covox Soundmaster II – speech recognition is among this card's abilities.

card on the market. The systems it mimics are Ad Lib, Sound Blaster, Covox Speech Thing, and Disney Sound Source. That's an impressive line-up as far as the dedicated games player is concerned because it amounts to this particular card being supported by just about every PC game released in the last couple of years.

Physically the card is similar to the Sound Blaster. Although it is quite long, it will, rather usefully, fit into an 8-bit slot. Like the Sound Blaster, the Galaxy features a MIDI in/out port which doubles as a game port, so, if you are running short of space, you can always take out your old game card. If you'd rather not do that, the game port on the Galaxy can be disabled and this won't stop you using it for MIDI functions.

Sound Blaster users will probably find the panel arrangement familiar as well, with line in, mic, and stereo audio output ports and the volume control in the same position. Aztech Systems have, at least, had the good sense to mark the ports, so there is much less chance of the board being damaged by, for example, an external audio device being accidentally plugged into the stereo output port rather than the line in socket.

Roland LAPC-I – a giant of a card in more ways than one, its quality will astound you.

The card is prefigured to use exactly the same address and IRQ line as the

Sound Blaster and these are changed in the same way, by moving jumper plugs on the card. The instructions for doing this are not the most friendly I've seen, and users who are nervous about fiddling with the card themselves may be better off getting a retailer to fit it for them.

A small, but useful, extra on the Galaxy is a short wire that enables you to disconnect the internal speaker in the PC and reroute the speaker output via the Galaxy Card. This simply involves unplugging the speaker from the motherboard and plugging in the wire from the Galaxy instead. It takes all of five seconds to do and means that, not only will PC generated sounds be a little less painful, you'll also be able to turn them down or off completely ... bliss! You can also do this on the Sound Blaster Pro and the Covox Soundmaster II, but the Sound Blaster doesn't include a cable!

Aztech have also been good enough to throw in a pair of stereo speakers. All right, these are obviously the sort of speakers you can buy at £5 a time in the local market to plug into your Walkman, but at least you can start exploring the Galaxy's capabilities from the moment you install the card, and they're a godsend for users who don't have a hi-fi located near their computer.

Once you've successfully installed the card, setting it up and testing it is easy. There are two high density disks with the software in compressed form. Another indication of the thought that has been put into this package is a utility which allows you to set the volume and tone levels for the board before running software that uses it. In addition, there's an impressive selection of software, including the music accompaniment program Band-in-a-Box, a sample editor, and a text to speech synthesiser.

Another nice inclusion is some music teaching software designed to work with MIDI instruments that have been plugged into the board and sampling software which supports the mic socket.

Performance wise, this board produced good, clear sounds in all of its modes, although I did occasionally notice some interference, especially at high volumes.

Note that, at the time of writing, Aztech was still looking for a distributor in the UK. For further details on the availability of the board in this country, contact Aztech in Singapore. Also available, in order of sophistication, are the EX Card (US$89), the BX Card (US$119), the NX(A) Pro Card (US$199) and the NX(S) Pro Card (US$219). Contact Aztech for further details.

Covox Soundmaster+
Covox
(0983) 867050
£79.99

Having recognised, perhaps, that its Speech Thing was getting a little long in the tooth, and that most PC games players demand more sophisticated sound output, Covox has come up with the Soundmaster+. Unlike the Speech Thing, this is a card, although full marks to Covox for making it the most compact of those I've reviewed. It only requires an 8-bit slot and should be small enough to fit into many compact machines, as well as standard size desktops.

Like the Sound Blaster and Sound Galaxy, Soundmaster+ supports two modes of sound generation, digitised sound and tone generation. Both of these modes emulate another sound device. Tone generation is compatible with the basic Ad Lib board. So far, so good: most games support this mode, so there shouldn't be any problems. The digitised sound mode, however, emulates the Speech Thing. Covox claims that to emulate Sound Blasters digitised output would have been a technological step backwards. That may well be, but, in Europe at least, support for the Sound Blaster is far greater than it is for the Speech Thing.

Output from the board is via a single jack socket with a volume control. You can, if you wish, reroute the signal for the internal speaker through the Soundmaster.

The Soundmaster+ is a worthy successor to the now defunct Ad Lib, but with Sound Blaster support it would have been a real winner.

Soundmaster II
Covox
(0983) 867050
£199.99

The most expensive board in the Covox range is potentially one of the most exciting of the devices in its price range, but is let down by a couple of minor points. While it is essentially based on the Soundmaster+, including the Speech Thing and Ad Lib support, it boasts some impressive additional features.

Like the Sound Blaster and Sound Galaxy, Sound Master II has a microphone input so that you can sample your own sounds, but it also has an alternative function. Soundmaster II emulates the Voice Recognition functions of the Covox Voice Master. This enables you to add voice commands to existing software, but, be warned, it takes some patience to get it set up exactly as you want it and

working properly. A useful extra in this package is a headset comprising a mono headphone and microphone.

The Soundmaster II also incorporates a MIDI interface and PC-Lyra music composition software. This is somewhat unusual for sequencing software in that it displays your creations in proper musical notation.

The Soundmaster II is sadly lacking joystick support and Sound Blaster emulation. With these two improvements and it's versatility it would have been an ideal first buy or upgrade.

Roland LAPC-1
£379

Roland's cards have never proved quite as popular as either the Sound Blaster or Ad Lib's cards, and yet they have been supported almost as widely as both. The reason for the former is that the boards are prohibitively expensive. The reason for the latter is that what you get for your money is essentially a Roland polyphonic synthesiser without the keyboard, and the music that it can generate is nothing short of stunning.

The LAPC-1 is the older system, and contains an eight voice synthesiser with 128 instruments, a rhythm voice with 34 sounds and 33 sound effects. The available instruments range from Acoustic Piano to Electric Guitar and include some less orthodox ones like Funny Vox, a synthetic voice sound. Rhythm has the usual standard drum sounds, as well as more exotic instruments like a Quijada (what's a Quijada?).

One thing that the LAPC-1 can't cope with is digitised sounds, although the range of built-in sound effects covers commonly used noises like explosions and a pistol. Although the lack of digitised sounds may seem like a severe limitation, you have only to listen to the sound that games like Monkey Island II get out of this card to recognise what puts Roland's devices into a different price bracket.

This is very much a no frills package. You don't get any fancy software and the manual is little more than a technical document. The card itself is the largest of those I've looked at, full length in fact, so you may not be able to fit it into a compact machine. Other than that, the card is fairly simple with a just a pair of phono jacks for left output and right output, and the MIDI port forming the full complement of connectors.
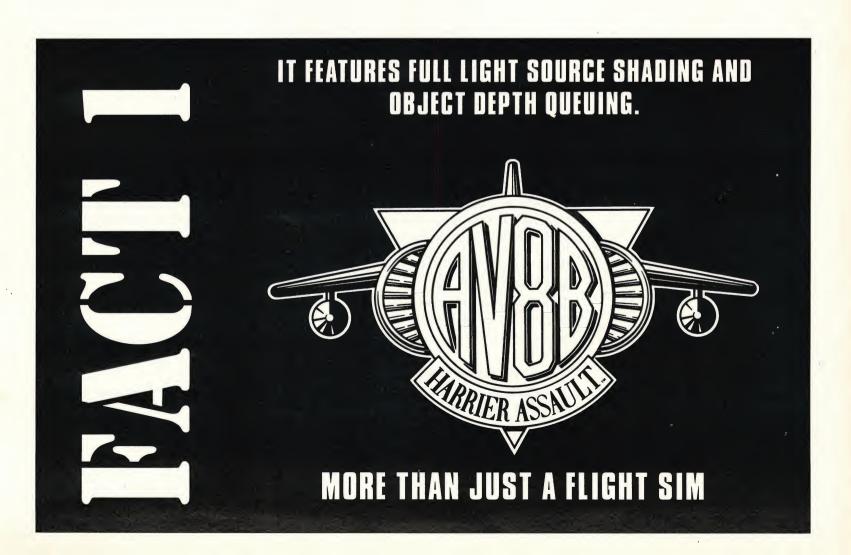
Roland SCC-1 – the new card in Roland's stable is a real winner with its MIDI capabilities.

The MIDI function means that you can connect the board to a wide range of Roland equipment, providing that you buy the optional MCB-1 MIDI connector box. Buy yourself a MIDI keyboard and some decent sequencing software as well and you've already got a very powerful set-up, comparable to having a fully integrated Roland synthesiser.

There are essentially two reasons for buying the LAPC-1. The first is that, if you are in the fortunate position of having a large enough budget, the music that will accompany your games will be far and away superior to the sound generated by other cards.

The second reason is that you plan to connect MIDI equipment and to use your computer for sequencing and other musi-

Covox Speech Thing – the golden oldie of sound add-ons is still going strong.

cal functions. In the latter case, the LAPC-1 gets you off to an extremely good start by providing, not only a MIDI interface, but a keyboardless synthesiser into the bargain.

Roland SCC-1
£335

This is the most sophisticated board I've reviewed. Fundamentally it is an advanced version of the LAPC-1, but there are some significant enhancements. Firstly, this is what Roland describes as a GS Sound Card, which means that it is designed to be fully compatible with other GS equipment that Roland manufactures. Compatible in this case does not just mean that the machines will talk to each other properly, MIDI already performs this function, but that song files should sound approximately the same when played by different GS machines.

As well as built in chorus and reverb effects, the SCC-1 supports bank switching, so more than 128 sounds can be made available, and an incredible 24 simultaneous voices. This does mean that the SCC-1 is perfectly capable of producing very orchestral sounds. If you want an idea just how good this board sounds, pop into your nearest dealer and ask them to play a couple of the demo tracks that are supplied on the utility disk. The quality and richness of the sound will be enough to convince you that, like the LAPC-1, the SCC-1 is worthy of its hefty price tag.

Another advantage inherent in this board is that it includes a full MIDI processor, so you can connect it directly to MIDI equipment without having to use the MBC-1 connector box. If you're really serious about making music with your PC and you haven't got a limited budget then you'd be well advised to strongly consider the SCC-1 as an option.

Covox Speech Thing
Covox
(0983) 867050
£84.99

This is one of the oldest sound add-ons available, and it shows. The Speech Thing is one of the devices that plugs into a parallel port, rather than taking up a spare expansion slot. Essentially it is little more than a digital to analogue converter, which means that the software has to do all of the work as far as generating the sound is concerned.

Hardware wise, what you get is a flimsy plastic connector which fits into your parallel printer port, and a tacky looking white plastic speaker with a volume control which, in turn, plugs into the connector. The speaker can run from a mains adaptor or an internal battery, one of which is thoughtfully supplied with the package. If you use a printer, you can connect it to the back of the Speech Thing connector, but this results in a dangerously wobbly protrusion from the rear of the machine which looks highly likely to get snapped off accidentally.

As its name implies, the Speech Thing has been primarily designed to reproduce

Disney Sound Source – The new boy from Disney is cheap and definitely cheerful.

speech, but can generate any sampled sounds. The tiny speaker produces reasonable quality sound for its size.

The software and the manual for Speech Thing both assume some knowledge of DOS, so this isn't really a device that conforms to the modern plug in and go philosophy. Some of the software also requires that you have a copy of GW-BASIC, which isn't much use to owners of DOS 5.0, who will all have the more up to date QBASIC. Besides this, all the software is in mono, and is not particularly entertaining. A talking Blackjack game is about as exciting as it gets.

The Disney Sound Source
Infogrames
(071)-738 8199
£35.99

This newcomer looks like a modern version of the Speech Thing. It connects to the printer port in the same way (and once again, a printer can be connected behind it in a precarious fashion). It also comes supplied with a smarter looking speaker and volume control, only this one can only be powered by battery (which isn't supplied).

The sound source doesn't come with any set-up or demonstration software, and is principally intended to work with Disney's own software. Now, when you play Mickey's Jigsaw Puzzles you'll be greeted by the dulcet tones of the famous mouse himself. This device does seem to have attracted more third party support,which naturally makes it a slightly more useful buy than the other devices in its price range.

Support Test

To give you some idea of how extensively each card is supported, we put together a list of games covering the most popular genres and checked which devices they were compatible with. This was the result:

Flight Simulator - Falcon 3: Soundmaster+, Soundmaster II, Sound Galaxy NX, Sound Blaster Pro, LAPC-1, SCC-1

Adventure Game - Indiana Jones and the Fate of Atlantis: Waveplay RS, Covox Speech Thing, Soundmaster+, Soundmaster II, Sound Galaxy NX, Sound Blaster Pro, LAPC-1, SCC-1
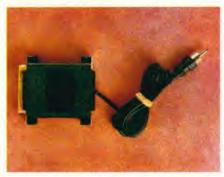
Arcade Game - Gods: Soundmaster+, Soundmaster II, Sound Galaxy NX, Sound Blaster Pro, LAPC-1, SCC-1

CD product - Multimedia Beethoven: Sound Galaxy NX, Sound Blaster Pro

Role Playing Game - Ultima Underworld: Soundmaster+, Soundmaster II, Sound Galaxy NX, Sound Blaster Pro, LAPC-1, SCC-1

Strategy Game - Civilization: Soundmaster+, Soundmaster II, Sound Galaxy NX, Sound Blaster Pro, LAPC-1, SCC-1

Sports Simulation - Links: Soundmaster+, Soundmaster II, Sound Galaxy NX, Sound Blaster Pro

Educational - Fun School Series (from IV onwards): 0625 859444 Soundmaster+, Soundmaster II, Sound Galaxy NX, Sound Blaster Pro

Intersound MDO – from Coktel Vision, it's about as simple as they come.

Intersound MDO
Coktel Vision
(010 331) 46309957
FF200

Another device which simply plugs into the parallel printer port. The Intersound doesn't allow you to connect a printer at the same time, however. Neither is it supplied with a speaker or amplifier of any description. The device terminates in a single phono plug which you have to connect to an external amplifier.

The Intersound comes with a single page of instructions, but no software, and at present most of the software that sup-ports it is from Coktel Visions, the company that also creates it. I found that the sound quality was not quite up to the standard of other devices of this ilk, and given that, and the lack of supporting software I can't really recommend this device to anyone other than devoted Coktel Vision fans.

If you are interested, note that you will have to contact Patricia Lemarchand in France to order the Intersound, which is available at a very reasonable 200 French francs (that's about £20.00).

Waveplay RS Unit
Speech International
(0865) 245120
£TBA
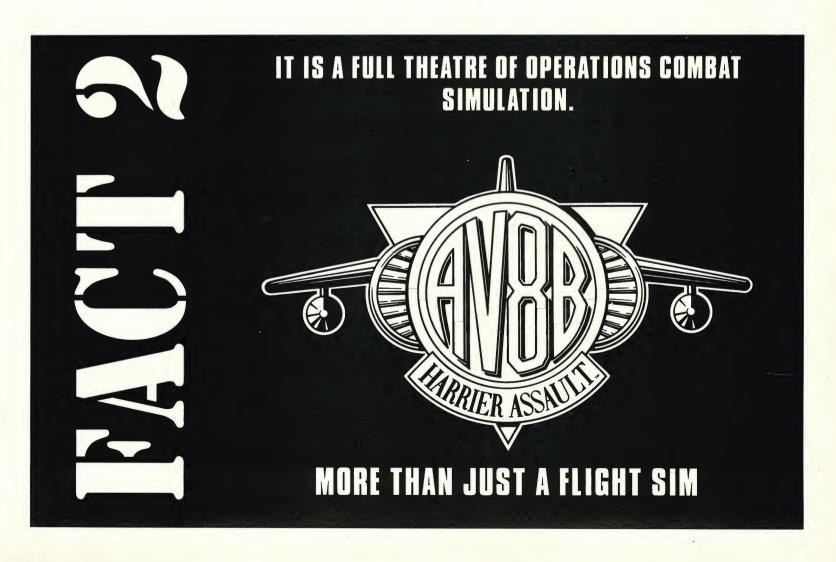
Yet another recent contender at the cheaper end of the market, the Waveplay gadget also plugs into a parallel printer port and emulates the longer lived Covox Speech Thing. Unlike the Speech Thing, though, it won't coexist with a printer in the same socket.

This unit is supplied in a more sturdy metal casing which terminates in a 3.5mm jack socket into which you can plug an external amplifier. A pair of stereo Walkman-type ear pieces are included with the unit, although the strength of sound you get from these will depend very much on the voltage level present at your parallel port.

The software that comes with Waveplay is more modern and easier to use than that with Speech Thing, but there's less of it.

Waveplay RS – it has Covox Speech Thing compatibility, but what do you do with your printer?

Comparison Table

	Waveplay RS	Covox Speech Thing	Disney Sound Source	Intersound MDO	Soundmaster+	Soundmaster II	Sound Blaster Pro	Sound Galaxy NX	LAPC-1	SCC-1
Price	£TBA	£84.99	£35.99	FF200	£79.99	£199.99	US$149.00	£222.00	£379.00	£335.00
Internal/external	External	External	External	External	Internal	Internal	Internal	Internal	Internal	Internal
Expansion slot size	N/A	N/A	N/A	N/A	8-bit	8-bit	16-bit	16-bit	8-bit	16-bit
Card size	N/A	N/A	N/A	N/A	half-size	half-size	half-size	half-size	full-length	half-size
Printer connection	No	Yes	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A
Tone generated sound	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Instrument channels	N/A	N/A	N/A	N/A	6	6	6(9)	15*3	8	16*8
Rhythm/noise channels	N/A	N/A	N/A	N/A	5	5	5	5*4	1	1
Digitised sound	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Stereo	No	No	No	No	No	No	No	Yes	Yes	Yes
Sound Blaster compatible	No	No	No	No	No	No*1	Yes	No	No	N0
Ad Lib compatible	No	No	No	No	Yes	Yes	Yes	Yes	No	No
Roland compatible	No	No	No	No	No	No	No	No	Yes	Yes
Covox Speech Thing compatible	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No
Disney Sound Source compatible	No	No	Yes	No	No	No	Yes	No	Yes	No
Game port	No	No	No	No	No	No	Yes	Yes	No	No
MIDI interface	No	No	No	No	No	No	Yes*2	Yes	Yes*7	Yes
Manual volume control	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No
Software volume control	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Software tone control	No	No	No	No	No	No	Yes	Yes	No	No
Built-in amplifier	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Speaker(s) supplied	No	Yes	Yes	No	No	No	Yes	No	No	No
Headphones supplied	Yes	No	No	No	No	Yes	No	No	No	No
CD-ROM interface	No	No	No	No	No	No	Yes	Yes*5	No	No
Text to speech facility	No	Yes	No	No	Yes	Yes	Yes	Yes	No	No
Speech recognition facility	No	No	No	No	No	Yes	No	No	No	No
Bundled software	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes
Sampling facility	No	No	No	No	No	Yes	Yes	Yes	No	No
Microphone supplied	No	No	No	No	No	Yes	No	No	No	No
9 volt cell required	No	Yes	Yes	No	No	No	No	No	No	No
Internal speaker connection	No	No	No	No	Yes	Yes	Yes	Yes*6	No	No

Notes

*1: Soundmaster II does include a utility for converting Sound Blaster sound files so that they will work, but you'll need an 80386 or better to use it.

*2: A MIDI connecting lead is not included.

*3: This is the maximum number of channels. In some configurations it may be less.

*4: This is the maximum number of channels. In some configurations it may be less.

*5: Will only work with Creative's own CD-ROM drives.

*6: A connecting cable is not included.

*7: MBC-1 MIDI connector box is required.

*8: Although only 16 instruments can be played at once, the card will support 24 simultaneous notes.

Verdict

Your final choice of card is going to be largely dictated by your budget. If you are on a severe budget, that is, less than £100, the Soundmaster+ is a reasonable buy, for even more restricted budgets I'd think carefully about the Disney Sound Source. Of all those really cheap devices, this one looks as if it will attract most third party support.

In the mid-price range then, providing its UK price is right, the Sound Galaxy NX will be a very strong contender, and its many compatibility modes will ensure that you can run most software with it.

If your interest is multimedia then you can look no further than the Sound Blaster Pro. This versatile machine still represents the best value for money for a device of its capabilities. I'd only consider the Soundmaster II if you are really keen on experimenting with the voice recognition.

If you plan to experiment with MIDI or music composition then my advice would be don't skimp, save up for one of the two Roland cards. If you want good game sound and you're worried about the consequent lack of digitised effects, then you can always add one of the less expen-

sive devices with this facility at a later more affluent date. Many games will support two cards, one for music and the other for sound effects.

The final major consideration must be support. There's no point in having an all-singing, all-dancing card if it's only supported by three products. The Sound Blaster is definitely the front runner in this respect, closely followed by the LAPC-1, but you can expect this situation to change over the coming year.

Whatever your choice, you'll find that having decent sound will give your PC a whole new lease of life.

With the sudden increase in top quality golf games you may not know which way to turn. Paul Presley caddies for four of the best and finds out which has the lowest handicap

> " Golf is a game whose aim is to hit a very small ball into an even smaller hole, with weapons singularly ill-designed for the purpose. "
>
> *Sir Winston Churchill*

Golf is a very peculiar game, especially so on a computer. Take the rather odd situation in which I found myself recently as an example. During the middle of a round of Access's Links with a colleague here at the office, we found a bug in the program that allowed you to place your ball anywhere you liked on the hole and effectively allow you to get holes in one on all 18 pins. While in most games the discovery of such a cheat would ensure its constant use, causing most players to amass huge scores, as far as Links was concerned, making use of this bug was just going to ruin the game. We both decided to ignore it and carry on as normal, enjoying the game at our own pace and appreciating the skill involved with mastering the game the fair way (no pun intended).

Golf is one of the few games left today that is as steeped in honour and good sportsmanship as it is in skill of the game itself. Indeed, the whole addiction of golf is the player's constantly developing skills, the steady progression from complete novice to scratch golfer, the handicapped scoring system that would allow a Sunday morning amateur to play the club professional on an even basis and the sheer enjoyment of taking a leisurely, healthy walk in the park while exercising your competitive spirit in the company of your peers.

Straight down the middle
a golfing fourball

With regard to computer simulations, there seem to be more golf games than golf courses these days, each one managing to surpass the last in terms of technical achievement. Unfortunately for the consumer, the task of choosing which of the attractively decorated boxes, bearing fancy elongated names like Jack Nicklaus's Golf and Course Design Signature Edition, is slightly more tricky than making sure they have a machine that meets all the correct specifications.

If I were to review the four games I'm taking a look at here separately, they would all get a six to seven star rating. So how can you tell which one is best? The logical method is to play each, but most people can't do that unless they buy them first, by which time you've defeated the purpose. The only other way to ensure your hard-earned money is invested wisely is to pitch the four best games against each other and see which one wins — ie, the aforementioned Jack Nicklaus title, Links 386 Pro (referred to throughout simply as Links, so don't confuse it with Access's original game), PGA Tour Golf for Windows (the latest version of the long-running classic) and David Leadbetter's Golf, the new game from Microprose.

The trouble with the majority of today's golf sims — these four included — is that if you strip away all the options and reduce the games to their basic control methods, there is no difference. They all use the three click backswing/power/connect method (with the sole exception of Links which requires you to keep the mouse button held down to select power, but essentially it's the same thing). The only thing that differs is the shape of the swing indicator and the list of icons runnign along the side of the screen.

Although there are plenty of golfing simulations on the market (and plenty more still to come), we've taken the best four currently available. They are:

Jack Nicklaus Golf & Course Design
Accolade (081) 877 0880, £39.99

Links 386 Pro
US Gold (021) 625 3366, £45.99

David Leadbetter's Golf
MicroProse (0666) 504326, £44.99

PGA Tour Golf for Windows
Electronic Arts (0753) 549442, £39.99

So it all comes down to options. Does your game allow you to play at different courses? Can you adjust your foot stance to combat varying conditions? Can you replay spectacular shots or save them to disk? And most importantly, do you have fun while you're playing or does it take itself just a little too seriously?

The clubhouse
Let's start at the beginning (as good a place as any). First impressions count and how a game presents itself is almost as important as how it plays. Easily the most friendly of the games is MicroProse's David Leadbetter. A graphic representation of the actual clubhouse is dotted with 'action areas', positions that allow you to go to other screens when selected. An especially nice touch is that each of the game's eight courses has a separate clubhouse screen. This is certainly the most comfortable of the four games, giving the best impression of being at a golf course. The only other game to come close to it (and even then it's a large gap) is PGA with its familiar Pro Shop screen and pull-down menus. Links Pro and Jack Nicklaus both rely on the rather cold and unfriendly menu screens to set everything up, although the digitised backdrops are nice and pretty.

As far as options go, it's a close battle between Links and Leadbetter for quantity. PGA merely offers you the choice of tournament or regular play, what clubs you'll carry and various technical options such as automatic grid screens, music or sound effects and hole previews. Jack Nicklaus' is a little better, allowing you to play two different styles of game — skins and strokeplay — and with a fairly comprehensive player creation menu,

David Leadbetter's Golf uses different clubhouse screens for each course.

at least for the computer opponents. In a similar method to a decent chess program you can select the computer's style of play, changing accuracy, power, tendency to hook the ball etc. One annoying aspect of Jack Nicklaus, though, is that while you can select different animations for the different players, there are only three male routines and one female. This means that for any fourball team made up solely of men, one player is going to feel a little strange wearing a dress.

The other two, by comparison, have a wealth of options to mess around with, but along different lines. Links's selections are mainly to do with the way you set up your screen layout, although the player set-ups are also pretty good. Which clubs, which tees, which colour shirt, which club is your average chipping club, whether you want a caddy and what level of play are on offer, as well as course conditions such as wind, green speeds and what holes to play.

Leadbetter's Golf is once again scoring the birdie, as it were. As if the clubhouses weren't enough, before you take to the field you can choose from 11 types of game (each with full stroke or matchplay rules), select the number of players, decided the number of mulligans allowed throughout the ▶

game, select the prize money for 'friendly' tournaments, set up a modem or serial link connection with another computer, call up previous course and player statistics and mess around with all the usual player creation options.

The Clubhouse — Par 4
(remember this is golf, the lower the score the better!)

Jack Nicklaus	5
PGA for Windows	5
David Leadbetter	3
Links 386 Pro	4

The driving range

While waiting for the first tee to become free, it's usually a good idea to spend a little time on either the driving range or the putting green. Each of our games has its own practice areas.

Of the four, PGA suffers most, mainly because it doesn't allow you to practise individual holes, just individual driving ranges for each of its four courses. For putting practice, the game puts you in a random position on a random hole from the current course.

Links, Jack Nicklaus and Leadbetter all let you experiment on any of the games' existing holes as well as giving you separate driving ranges and putting greens, but none of them go much further than that. You do get all of the usual in-game options for each of the games, but I'll judge those in a moment. As far as practising goes, there's little between them.

The Driving Range — Par 3

Jack Nicklaus	3
PGA for Windows	4
David Leadbetter	3
Links 386 Pro	3

The first tee

This is where the men are really separated from the boys. Now, as I said earlier, there is little difference in the way the games play. What does differ is the way they feel. For a long time now, PGA Tour Golf has been heralded as the most playable golf game going. This was before the others in today's line-up came along, and, from a personal point of view, I think it's beginning to look and feel slightly dated. It's still undeniably playable and if someone was to say, "Presley, come and have a game of PGA", I would gladly attend.

Part of its popularity is undoubtedly

The driving ranges of Jack Nicklaus (above) and David Leadbetter (left). Both have distance indicators marked either at the sides of the course or imprinted onto the ground. The overhead view seen on the left is just used for aiming your shot. Taking it switches the view to the more normal 3D view.

its simple approach (although at the time of its first release it was considered to be quite comprehensive). No messing around with foot stances, club faces, complex time-consuming digitised backdrops or any such nonsense. Just aim the cursor, take into account the wind, take the shot and watch the reverse-angle view as the ball lands on the improved-graphics-for-Windows surfaces. Simple fun and highly enjoyable for the occasional player that just wants to hit a ball around a course.

Of the four, Jack Nicklaus is probably the coldest. Whereas the others manage to create a passable feeling of actually having a good game of golf at a decent club on a bright and sunny day, playing a round at Jack's takes place in a somewhat gloomy, windy environment where rain threatens to come down at any minute. Aiming a shot isn't a wonderfully friendly process either. You are required to move a cursor along the top edge of the screen in order to indicate the direction. This isn't too bad for long-range shots like these, but as I'll mention in the next section, fine-tuning is almost impossible.

Jack Nicklaus does have one nice feature about its opening stages of play. From the hole overview screen you are able to view the pin from any stage of the current hole. Put your cursor on the map and it will draw the surroundings, allowing you to see what obstacles lie in the way and how to avoid them.

David Leadbetter's Golf lets you view the hole in a rather different manner. Before you take each tee shot, you are presented with an isometric map of the current hole (and any others in the immediate surroundings), from where you aim your shot, set your tee positions and foot stances and adjust your club choice (the latter three options, while not being essential to the gameplay, allow you to enter the 'advanced' stages of the simulation). Then comes the typical 3D view of your player and the tee and the polygon-based course. The fact that MicroProse's game uses polygons instead of digitised graphics means that this game has one particularly attractive and unique feature — the camera can follow the ball through its flight. Reverse angle views, tracking views, side-on panning views and swinging cameras that rotate around the ball as it flies. Another handy option on offer is the 'See pitch' icon. Selecting it suddenly zooms your viewpoint along the projected flight path of the ball, based on selected club and ball lie, letting you check out the landing zone before you make the ill-fated shot.

But the real leader of the pack has to be Links, although only if you have a machine running at least 33MHz. What sets it apart is that all the information you could need to take a shot can be presented on the one screen, thanks to the multi-combination viewing windows. The best set-up is to have your normal shot view, a reverse view of the green and an overhead view. This allows you to see the ball in every stage of its flight. You can also see any obstacles that might prove to be a hindrance and what kind of approach shot you'll be left with.

With Links you also get to adjust all the really 'professional' features — ie, your foot stance and club address (how open or closed you have your club when you hit it. Other features include the pin

The tee shot from a typical Links 386 Pro course. The view of the green is handy on par 3's for shwing you exactly where you land.

position indicator, used when your view of the green is obscured (click on the icon and the flag zooms from its position to your tee showing you which way to aim) and the practice swing. As with the real game, before taking a shot it's usually a good idea to step away from the ball and take a couple of swings first, to iron out the kinks so to speak. Links lets you just step back and swing away.

The First Tee — Par 4

Jack Nicklaus	6
PGA for Windows	4
David Leadbetter	3
Links 386 Pro	3

Trouble on the second

Uh oh. Despite the majority of the tee shots being perfect, it seems that all four of our competitors have ended up in trouble. Still at least this gives us a chance to see how they handle bad lies. Obstacles can be anything from water hazards to sand traps to heavy rough (although none of the games has so far managed to recreate Bernhard Langer's classic out-of-the-tree shot).

On the whole, bunker shots are handled in much the same way. Extra power is needed and there's always the chance of 'flubbing' the shot. PGA gives you the option of a 'punch' shot to control the ball more accurately (at the expense of distance). Leadbetter requires you to reposition your stance to compensate for bad angles and deep burials and Links and Jack Nicklaus simply require you to add extra power to your shot.

Water hazards are also handled in similar ways although Links, Jack Nicklaus and Leadbetter let you choose the position to drop your ball as well as giving you the option to retake the shot from the original position which is on offer in PGA. Mulligans are standard in all games except Leadbetter's which asks you to define the number allowed throughout the game.

Trouble On The Second — Par 5

Jack Nicklaus	5
PGA for Windows	6
David Leadbetter	5
Links 386 Pro	5

The approach shot

Off the tee, out of the bunker and approaching the green. Time to get the shorter irons out. Being able to chip the ball well is one of the most important aspects of play-
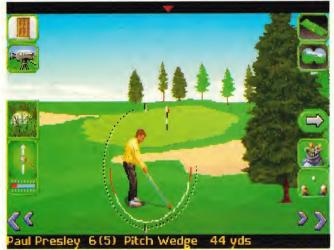
Shooting from a bunker in Links 386 Pro. The grid can be used to show you exactly how your ball lies in the sand.

ing good golf so any computer simulation worth its salt has to be able to handle this area with some degree of efficiency.

Up until now Links has been faring extremely well. Put a pitching wedge in its hand, though, and it turns into a lump of quivering jelly (no, really!). The trouble is with the strange power markings on the swing indicator. When you set up your player at the start you can select a 'chipping club' (the use of which isn't explained in the manual, so one can only assume that all chips are taken with this club). When you reach a distance that requires this club, the swing indicator will only let you select a certain amount of power for the shot. However, this power is either never quite enough or way too much and there's just no room to manoeuvre in between.

Approaching the green in PGA (right) and David Leadbetter (below). As with all of the games, you'll very rarely use full power when chipping, so guessing exactly where to stop the backswing is more of a challenge.

Paul Presley 6 (5) Pitch Wedge 44 yds

There's little to separate the others as far as chipping goes, but the straight line swing indicators of Jack Nicklaus and PGA have a slight advantage over Leadbetter, merely because you can easily see the different amounts of power to use. PGA does have a disadvantage in that you can't lay a grid straight on to the green in order to take slopes and ridges into account.

The Approach Shot — Par 4

Jack Nicklaus	4
PGA for Windows	4
David Leadbetter	4
Links 386 Pro	5

On the green

A reasonable chip then, and we're left with a 30 foot putt to win the hole. Will our players just roll it in or will they do a Bernhard Langer and miss right when it matters most? The majority of the games stick with the same three-click method for putting, the one exception being David Leadbetter.

After mastering the three-click swing method for approach shots, you then change to a horizontal 'cricket bat' indicator for putting. This is presumably to represent the simple horizontal motion of a golfer's arms in the real game as opposed to a large swing. It doesn't work too badly as a matter of fact, although the aiming process could be a little easier. I also encountered a few dodgy decisions as my ball rolled on to the hole, appeared to drop but was somehow resting on the lip. The grid is simple enough and represents the slopes well and you can even take a look from behind the pin towards your ball and from a side-on view.

By far the nicest game to putt on is Links. The grid is well defined, showing the contours of the slopes with just enough precision to prevent wildly inaccurate putts and despite the lack of power indicators, it doesn't take too much practice to get a good feel for exactly how much to apply. The other nice option is the 'gimme', if you're within spitting distance from the hole and you don't want to risk messing up the shot due to a bad mouse or some other external force, it'll put the ball straight in the hole for you.

The gimme also makes an appearance in Jack Nicklaus, although under the guise of the 'tap-in'. Putting is one of Jack Nicklaus weakest points, mainly because the aiming system doesn't change. Trying to aim your path along a myriad of little hills and ridges isn't that easy

when you're at the top of the screen instead of on it.

PGA's putting sections are also pretty much standard fare, with the irritating aspect of having to go through menus and change screens whenever you want to see a grid view of the hole. Otherwise it's quite entertaining, with atmospheric 'oohs' and 'aahs' when you narrowly miss the hole and cheers when you sink it under par.

On The Green — Par 5

Jack Nicklaus	6
PGA for Windows	5
David Leadbetter	4
Links 386 Pro	3

The 19th hole

And so they trudge wearily back to the clubhouse for a shower and a shave and a bevvie in the bar. So what awaits our gallant players when the round is over?

Unfortunately for Jack Nicklaus's Golf the answer is not much. The answer for PGA is even less. Both games have tournaments to enter and so therefore tournaments to win, but not much happens when you do. What both games do have is a player database into which is stored all the statistics for previous games.

Links offers even more in the way of statistics, with player screens, course screens and hole and club data. This gives you a much more accurate representation of your player and gives you a little bit more to aim for. It also lets you save especially nice (or especially awful) shots during the game and then view them once you've finished. But Links's most engaging after match feature is the ability to record your entire game, save it to a separate disk and give it to someone else to play against. When you reload a recorded game, the computer will control your player but he will perform exactly the same shots that you just did, effectively allowing players from all over the country to play against each other without even being there.

(Right) At the end of a game (or after every hole in Jack Nicklaus's case) you get a statistic screen showing you your putting averages, longest drives and other information.

One of the disadvantages of Links 386 Pro is that it is very hard to gauge how much putting power you will apply with the swing meter.

(Below) So who came out on top at the end of the day? While all games performed admirably, David Leadbetter's Golf just couldn't be matched for sheer enjoyment.

However, if it's after match features you want, you'd be hard pressed to beat David Leadbetter's Golf. It does one thing that no other golf game has yet managed to do, and because of it, it puts the game in a completely different league. Quite simply, David Leadbetter's Golf has a handicap system. Every time your player competes in a round of golf, his handicap is used in a realistic manner and on completion of the round, the player is awarded a new score. This really gives you something to work for as quite a few of the tournaments only let you take part if you have a scratch handicap, ie, zero, and you can only play against the professional players if you've reached their level of ability.

Leadbetter does something else to give the player an incentive to play better. Apart from the reams of statistics — everything from hole averages to course scores to club usage — the game records every shot you make, every single shot in every single game. Once back at the clubhouse you can enter the video playback mode and watch anything from a single shot to an entire game. You can also cross-reference shots from your database, asking to see, let's say, every shot that you've ever taken with a five iron, from light rough, that ended up in a bunker, on the back nine holes of any course. This gives you an unparalleled opportunity to analyse and improve your game. You can also create a slideshow of shots to show other people (just for those of you with an ego).

The PC Review Tour 1992 — course score: 29

	1	2	3	4	5	6	7	Total
Par for this round	4	3	4	5	4	5	4	29
David Leadbetter's Golf	3	3	3	5	4	4	2	24 (-5)
Links 386 Pro	4	3	3	5	5	3	3	26 (-3)
PGA for Windows	5	4	4	6	4	5	5	33 (+4)
Jack Nicklaus Sig. Edition	5	3	6	5	4	6	5	34 (+5)

The 19th Hole — Par 4
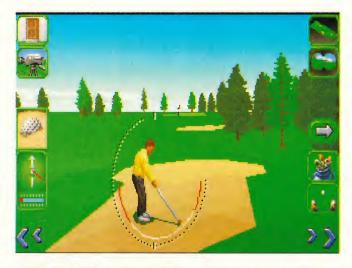
Jack Nicklaus	5
PGA for Windows	5
David Leadbetter	2
Links 386 Pro	3

The scores on the doors

The scorecards are in, the chairman is totting up the marks and we'll soon have our winner. In general, each game is good fun to play, especially with a group. Links 386 Pro is an exceptional piece of programming but really does need a powerful machine (SuperVGA, 33MHz, 4Mb of RAM) to appreciate it. PGA for Windows is a confirmed classic and is likely to remain so in many people's books. Jack Nicklaus has a strong pedigree and a good stable of previous games to rely on, plus a course designer to work with (this was not featured in the competition as we were testing the golfing aspects of each game). Finally, David Leadbetter's Golf has plenty to keep you coming back for more and has the many wonderful camera views to add to the atmosphere. And as we can see from the scorecard David Leadbetter's has taken it, closely followed in second by Links 386 Pro. A close fought battle for third and surprisingly the ageing classic still manages to hold its own against the digitsed graphics and long-running status of Jack Nicklaus.
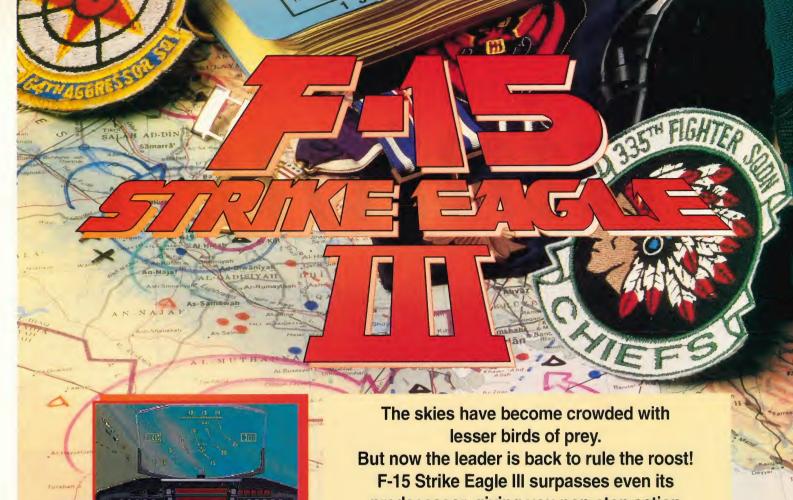
So, an enjoyable contest all round and a good chance to at least pretend that I was doing something healthy. Golf games are hardly likely to ever replace the real thing, but they do give us less gifted swingers a chance to partake in our favourite game without embarrassing ourselves too much.

Painting by

numbers

Whether your drawing style tends to H R Giger or Jackson Pollok, there are now many ways in which your PC can bring out the artist in you. Here, computer graphic artist Jonathan Inglis begins a three part series on how to how to use your hardware and software in order to create and show off your masterpieces

I n the early days of personal computing, the intrepid artist determined to put pictures on to a VDU had no choice. You taught yourself Basic, gleamed reams of obscure information about operating systems and began, not to draw, but to type! Hours later after inputting endless listings came the reward — a lumpy Lego style figure jerked flickeringly across the screen. Things could only get better.

The introduction of mouse and icon-based software freed the budding electronic Leonardo from the keyboard. Now you could actually draw with your micro — a major breakthrough. However, it's the dramatic increase in processing power on even the most basic PCs that has really affected the quality of the results you can achieve. Now that computers can display high resolution images of near photographic quality there's really no excuse for not making a start on that electronic masterpiece.

In this, the first of three articles on computer graphics, we'll be taking a look at some of the hardware and software needed to set up your own 'electronic studio'. You don't need to have all the latest equipment to use some of the packages reviewed, they'll run happily on a 286-based machine and very acceptable results can still be achieved with the old EGA graphics standard.

The series will concentrate on bitmapped packages, perhaps best called 'paint packages', whose approach is closer to conventional drawing and painting techniques than vector-based programs, such as Corel Draw or Illustrator, which are rather more suited to the needs of the professional designer.

Of the paint packages on the market the most established is ZSoft Paintbrush (sometimes distributed by Microsoft). Countless versions are now available often bundled in with certain hardware and software. Prices vary around the £100 mark. It features a very comprehensive range of options, particularly for manip- ▶

Left: the picture Chillon, by American graphic artist Armand Cabrera (© Electronic Arts).

The sequence of pictures, right, was built up by Jonathan Inglis from a sketch drawn on paper (top), then used as a template and scanned into the PC (centre). Finally the colours were added and extraneous lines removed in DeLuxe Paint 2 (bottom).
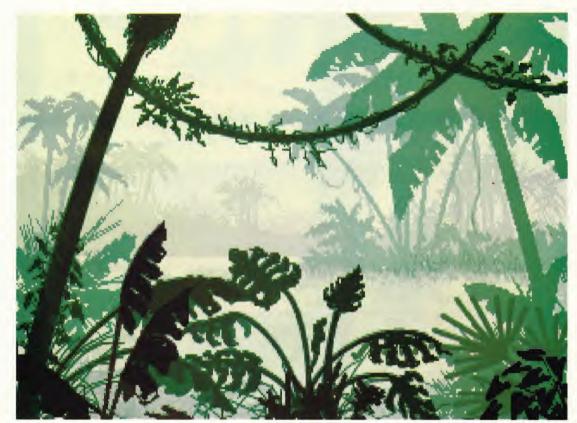
You don't need to use 256 colours ro produce striking artwork (above): Jungle by Armand Cabrera. Right: City (© Micro Haus).

Desktop presentations

Although traditionally associated with those rather cringe-making occasions at trade shows, presentation programs enable you to present any information in a scripted sequence, incorporating animation, dissolves and now even sound effects. Plenty of scope for the computerised graphic novel in fact. Most presentation packages will accept graphics and text files from a number of different formats and you can import your favourite image and add text and even bullet points if you're still determined to do that sales promotion.

For this you'll need some form of presentation software. One of the easiest to use is DPaint2's Gallery (bundled with Dpaint2). This creates a rolling presentation of individual screens with a range of transitions. More sophisticated features such as dissolves, limited animation, selective loading of cut-outs, etc, are available in Show Partner Lite (now available as shareware). If you really want to push the boat out, then take a look at Autodesk Animator Pro (from around the £350 mark) which sports an impressive array of special presentation and animation effects such as in-betweening, as well as being a powerful drawing package in its own right.

From an artistic point of view what could be better, once you've got a collection of great works of art stored on disk, than to present them as they were intended to be seen, on screen as a part of an electronic slideshow? This could be sent on disk to friends, potential employers etc — an art gallery on your desktop.

What of the future? It's a certainty that multimedia is set to play an even larg- ▶

ulating and processing images, and newer versions include extensive support for scanners. A cut-down version of Paintbrush is available as part of Windows. Deluxe Paint 2 Enhanced from Electronic Arts (RRP £99) is a more recent arrival. Based on the Amiga version of the program, it offers a more flexible and varied range of drawing options than Paintbrush. In my opinion, it's easily the best drawing package on the market at this level.

I'll be looking at the whole business of creating pictures using DPaint2 in more detail in the next issue. However there is more to computer graphics than just creating the images. Indeed this is often just the start of a more exciting journey into animation, presentations, publishing or multimedia. So let's look at some of the options open to you.

Desktop Publishing

Almost any document benefits from the addition of pictures so DTP is an obvious home for your cherished masterpiece. Unfortunately, DTP packages aren't too

happy with colour bitmapped images imported directly from paint packages, and the results can look pretty disappointing. To achieve the best quality reproduction of your work you'll need to convert your images into one of the more accepted formats for DTP, ie, the Tiff or EPS formats. It may also be worth converting the palette from colour to grey scale and reducing your image to half tones before you convert to Tiff or EPS. Once they've been imported into a DTP package your images can be further manipulated and worked on — offering even more scope for the ambitious artist!

Left: artwork commissioned by Distributive Systems for Computing and drawn using Deluxe Paint 2 by Jonathan Inglis.
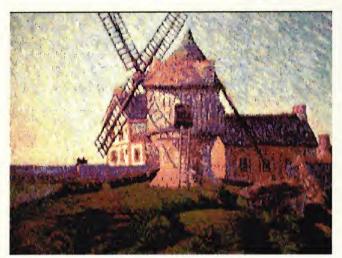
With a professional design program such as Autodesk, you can create images such as the hummingbird, right.

er part in the world of graphics programming. Already multimedia software such as Picturebook (from Digithurst, price £ú495) is available. The ability to combine animation, pictures, sound, text and video promises amazing opportunities for the artists of the future. Those little characters really started something when they began their slow jerky walk across the screen.

The electronic studio

Very little specialist kit is needed to set up your PC as a working working 'electronic studio'.

A good base system would consist of a 386-based PC with 4Mb of RAM, an 80Mb-100Mb hard disk, plus VGA monitor and ideally a video card with 1Mb of RAM (for tackling the higher VGA res-

© Micro Haus

"Logo" type pictures can be built up easily on the computer. The montage below, by Jonathan Inglis, first appeared in The Spectator magazine.

olutions). If your budget can stretch to it, why not investigate a frame grabber such as those produced by Rombo? This lets you interface your PC to any external video source, ie, camcorder or video recorder. Frame grabbing is far more flexible than using a scanner, enabling you to grab any image on video regardless of whether it fits comfortably into a two dimensional format. Try squeezing your best friend into a flat bed scanner if you don't believe me! At a starting price of £152, they represent very good value.

One of the advantages of using a frame grabber is that it can take the drudgery out of the initial drawing process. A rough

sketch is easy enough to grab. Once stored on disk it can be imported into your drawing package and worked on (see pictures).

As far as printers are concerned, unless you're really serious about volume printing, in which case look at laser printers, the obvious choice has to be an inkjet printer. Over the past few years the advances made in inkjet technology, particularly colour printing have been little short of extraordinary. A Hewlett-Packard Deskjet 500C not only gives you high quality results in colour but works equally as well as a standard black and white printer for day to day work. Excellent value at around the £ú450 mark (also see Issue 12 for more on printers).

Finally, there's your mouse. Most PC mice are designed for fairly light use. Drawing makes somewhat heavy physical demands on your mouse whilst at the same time requiring a high standard of sensitivity and response. The Microsoft Mouse, though expensive (around the £ú60 mark), has a pleasantly solid and comfortable feel compared with cheaper and flimsier mice that I've used, making it ideal for drawing.

Screen modes and memory usage

The level of detail and colour that your screen can display is dependent upon, a) the type of graphics card you have, b) the size of memory supplied on the VGA card and, c) the amount of extended mem-

ory in your PC. It's well worth paying the small extra cost to go for a VGA board with 1Mb of memory. This will give you a wider range of screen modes with, at the top end, a screen resolution of 1024 x 256 pixels with a choice of 256 colours. To access these you will also need to use a memory manager such as EMM386 (supplied with DOS 5). Because of the demands made on the average PC's memory (not to mention your eyes) by the highest resolution screen modes it is probably best to compromise by using the less memory hungry modes such as 800 x 600 or 640 x 480 in 256 colours.

File conversion

In the bad old days, exporting files from one program to another could be a nightmare. Pressure from users has forced programs to open their screens to more formats than just their own. However, there are still times when you need to call upon a utility program to help. Various programs now exist including Hijaak, PCXgrab, MS Paintbrush's Frieze and Dpaint2's Convert which allow for files to be captured and converted into other formats. You can also bridge the gap between different machines including the dreaded PC-Mac divide. The results of processing PCX files via Photoshop and into Quark Xpress on an Apple Macintosh can be seen in the pictures that accompany this article.■

Contacts

Electronic Arts (Deluxe Paints 2)	(0753) 549442
Rombo	(0506) 39046
Microsoft	(0734) 270001
Hewlett-Packard	(0344) 763767
Autodesk (Animator Pro)	(0483) 303322

You've seen them in films, in games, and even on adverts for nappies! Now it's your turn to have a go at full colour, simulated reality, 3D animations, based loosely on the Claymation filmmaking process used at Will Vinton Studios. Jonathan Inglis reports

W ill Vinton's Playmation is a comprehensive drawing, rendering and animation package designed by professional animators to run on your PC. And you don't need to take out a mortgage to afford it.

With Playmation you can create characters and objects, define their surface appearance and movements and set them in motion either on their own or in combination with other animated characters. The parameters of individual elements or whole animations can be changed within the program, allowing you to see the same animation from any angle with a range of different lighting options and special effects. The results as seen on the demonstration animations supplied with the program are impressive.

The program runs under Windows. You'll need a 386, or higher, PC with at least 4Mb of RAM and at least 3Mb of hard disk space. For improved performance a maths co-processor and 8Mb of RAM are recommended. Installation posed no problems, but be prepared for a labyrinthine directory structure. I stopped counting after the first hundred sub-directories! The program ran with no problems except for the Autoplay program, designed as a standalone filmshow for Playmation animations which terminated with the inevitable UAE message.

Creating an animation in Playmation involves a number of different processes. Basic shapes or 'segments' are created in the Sculpture section. All drawing takes place in three dimensions and whatever your object, it can be viewed from any angle. The technique used for drawing in Playmation is similar to that in vector-based

Michael Jackson's video for Moonwalker used Claymation techniques – but who's the guy on the right?

Sculpture

programs such as CorelDraw; shapes are created as a series of lines with 'handles' attached and can be bent or stretched to modify their final appearance. Playmation claims that its ability to create shapes using curves or 'splines' marks it out from other modelling programs which rely on straight sided polygons to build up three dimensional objects.
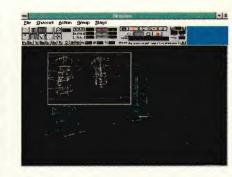
The next step, the Character section, assembles the basic shapes into a rather more complex structure. At this stage various attributes can be assigned such as colour, texture and reflectiveness — the all-too-familiar mirrored surfaces and glossy finishes!

Having assembled and fleshed out your object, your next job is to define the kinds of movements it will make. Here you have a choice. If you just want simple movement from one location to another then go to the Direction section. Direction allows you to select a 'path' which your character will move along, as well as camera angles, light sources and any variations in speed (such as a ball losing or gaining momentum as it bounces). The Action section is for more complex movement involving groups of actions taking place at different relative speeds such as most human or animal movements.

Playmation offers many options designed to replicate different types of movement and these can be applied to your characters and the elements within them. As you can imagine, simulating human movement is not easy and this is probably the most demanding section of the program. Once you've defined your by now all-dancing android you transfer it into Direction and 'choreograph' the results.

The final section, Render, takes the results of your Direction file, adding the colour, shading and lighting chosen in the Character section and assembles these into an animation. Here you can add the finishing touches to your animation, altering colours, adding shadow and even introducing an atmospheric haze!

If all this sounds like far too much work, then don't despair. Playmation comes packed with libraries full of objects, characters, background scenery, letters and numbers and animations which I found extremely useful as a starting point. By modifying and altering objects and ani-

mations and watching the end results I began to get the hang of how it all works.

There's no denying that this is a complex program. Its origins lie in the world of film animation and throughout it's clear that the program's creators understand the technical and artistic demands of the medium. As well as the features covered in this review there is a long and tempting list of additional options on offer. I found using the program absorbing and great fun if at times confusing, largely I suspect down to the accompanying documentation.

For such a complex program the manual, at 180 pages, isn't the massive tome you might expect. The Quick Start (beloved of manual writers) was certainly quick, far too quick in fact. It takes you straight from the initial Sculpture Section, to Render, the final stage, with a very brief stop in Direction, in just over five pages.

The rest of the manual provided both enlightenment and some confusion. Although some sections are clear and well written, others just did not provide the information I wanted. It isn't always clear, for example, how and (given the program's complex system of subdirectories) where, to save work before going on to the next stage of the process.

Nonetheless, this is potentially a very impressive piece of software. If Playmation is capable, as I suspect it is, of doing what the manual says it can — but doesn't always explain — then this is a remarkable program destined to captivate many a user and keep that hard disk and processor working overtime as those 3D androids go charging round your screen.
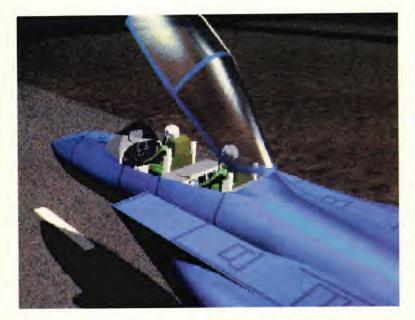
in motion

No, these aren't from the actual game, rather the stunning intro sequence. They're not static screens either. Everything is animated as the F-15 streaks down the runway, lifts into the air, finds its target and eliminates it.

F-15 Strike Eagle III

MicroProse gets back to its roots in the third of the long-running series

Does anyone remember the original F-15 Strike Eagle, I wonder? Wire-frame graphics, EGA mode at best, no sound other than the internal speaker. It's a far cry from the latest state-of-the-art flight simulator to emerge bearing the Eagle's name, a game that's set to push back the limits of the PC's technology once again with its superb graphics and awesome attention to detail.

"What we are trying to do is to make the player really feel as though he's in this plane and in the situation", proudly exclaims Andy Hollis, chief designer for the game. "This much detail tends to give you that much more of a suspension of disbelief. It draws you into it that much more."

If anyone should know how to make a flight simulator believable, it's Hollis. Amongst his previous works are such notable names as the two previous F-15s, F-19 Stealth Fighter and the ubiquitous Gunship. Of course, as with all MicroProse projects, this isn't a solo effort. Hollis's team reads like an American football line-up but the principal players are Jim Day (design), Scott Stanburg (graphics), Bill Becker and Detmar Peterke (programming), Barbara Bents (lead artist) and the infamous Max Remington (3D object building). "The other person that's important is George Wargo," adds Hollis. "George spent 20 years in the Air Force, the last five flying F-15s. He's brought a wealth of knowledge to the project as well as letting us visit the only squad of F-15s based in the states. They let us climb all over one, they fired it up and let us see around inside.

F-15 III makes some interesting new developments in the use of graphics. Take the clouds for example. Most games either turn the bottom of the screen white after a certain altitude is reached or else have huge white polygons floating in the sky like airships. F-15 III has clouds that look like clouds, from above and below.

They showed us all the displays, how everything worked, how all the ordinance worked. It was quite an informative trip ... a whole lot of fun too."

Understandably, MicroProse has always worked pretty closely with the military when designing its simulations. "The military has been very good to us. As with any government organisation there's a bit of red tape at times, but these fellers — the 335th Tactical Fighter Squadron — have just been outstanding; they couldn't do enough for us."

All this research appears to have paid off. F-15 III is one of those simulators that wows you on first sight and then keeps you hooked for the long-term due to its depth and complexity. It's also packed with new techniques and features, most of which have rarely been seen in a computer game before. Just take the graphics, for instance. From the simply stunning intro sequence to the actual level of detail in the game, you can't help but be impressed with it.

It appears to be as detailed from the technical point of view as it does from the graphic side too. How many simulators do you know that allow you to raise and lower the radar antenna, or that actually show you the airbrake

opening and closing rather than just telling you about it? Switch on the afterburners and you're treated to a plume of flame shooting out of your engines. Flying at night? Turn on the infra-red and give yourself a heat sensitive display on your HUD to help you see. Flying with weapons? Switch to an outside view and you'll actually get to see your arsenal hanging under your wings. It's definitely the graphic quality that's the really important area of development though.

"We have a whole new visual system for F-15 III," comments Hollis, "that combines the classical 3D techniques that we've always used with a 2D bitmap texturing. The most obvious use of that is the clouds and the ground detail. What this does is give you a much better feeling of motion across the ground.

"We've also pushed the traditional 3D technology as far as we can. For example, if you look at your plane from an outside view you see quite a bit that animates. The animation for the landing gear has about 50 to 60 moving parts — each of the little doors open and the wheels spin out from inside."

In what seems like a response to the threat of Spectrum Holobyte's multi-player EBS (Electronic Battlefield System), MicroProse has stepped ahead with multi-comput- er technology of its own. F-15 III is one of the first products to really put the systems to the test. Linking two PCs together (either through modems or serial links) allows you to have two players dogfighting with each other, two players acting as wingmen on the same mission or even two players in the same plane.

The F-15 is a two-man fighter, containing a pilot and a weapons control officer. Should the two players so desire one can act as the pilot, taking care of actually flying the plane, dodging the missiles and getting it successfully to the targets, while the other sits in the backseat controlling all the weapons systems, finding and tracking targets and taking care of navigation.

It's a form of multi-player gaming that hasn't been seen before and, as such, matches a lot of the game's technology. F-15 III is set to be yet another of MicroProse's milestone products, launching a whole new batch of simulators that use similar graphic and programming techniques. With such a rosy outlook for the genre it should be well worth waiting for.

Ground detail is an important aspect of F-15 III as part of the aircraft's role is to bomb important targets. MicroProse has opted for the use of bitmaps over polygons to give the world more graphic detail.

Title:	F-15 Strike Eagle III
Publisher:	MicroProse
Genre:	Flight simulator
Programming team:	MicroProse US
Release date:	October
Price:	TBA

Ragnarok

Smooth, clear graphics are used for the cast of characters.

The drawings are taken from some of Imagitec's original sketches on paper, showing rough

RPGs and adventure games often come with a hefty scenario in tow, designed to put the player in the mood and to build an instant atmosphere. This device has even been used on occasion by developers of arcade games (although in these cases it's always been entirely irrelevant), but never in the field of PC gaming has anyone tried it with a board game conversion. Until now, that is ...

Just like Core's Heimdall, Ragnarok comes complete with an accompanying saga of Viking mythology and battles between the gods.

Ragnarok, it would seem, was a time described in Norse mythology when the gods assembled to fight out an apocalyptic battle which signified the end of the old world and the beginning of the new.

Mirage's game is set just prior to this momentous occasion en Odin (leader of the gods), in his desperation to vay to survive this ominous rumble, assumed the f a mere mortal and challenged the occupants of a inn to play him at the ancient Viking game of The 's Table.

The King's Table (also known in certain parts as 'he Viking Game) is similar in style to chess, with one player attempting to rescue Odin (who appears n the game as the equivalent of a chess king) from he clutches of an opposition of superior number. Odin's belief is that by challenging as many different opponents as possible to beat him at the game, ie'll be able to devise a strategy that will save his life at the imminent battle.

But does he really think that there's anything to learn from the touchy and violent Bodvar War-Tooth, the timid fop Halfred Lace-Cuff or the serving boy Geirmund Borkson? Still, when you life's at stake, anything is worth trying.

Designed by Nigel Kershaw and programmed by Hugh David (with the help of a list of graphic artists too long to mention), Imagitec's computer version sticks closely to the ancient game's traditional rules, but has added a few of its own for the sake of

A computer board game, superficially similar to chess, with a Viking flavour

enhanced gameplay. The ultimate object is to beat each of the 12 opponents twice — once as black and once as white.

The game itself works as follows. Two sides face up to one another, with the White side, representing good, surrounded by the evil Black forces. The object is for white's 'king' to make his way to any one of the board's four corners — black simply has to stop him by surrounding him on four sides: it may sound simple enough in theory, but it can become fiendishly tricky when both players are of equal calibre.

White's side consists of eight pawns, four special pieces (chosen from an original complement of six) and Odin himself; while black's array totals 20 pawns and four special pieces (once again chosen from six).

Each piece has a certain restriction on his movements — for example, Frey (the God of fertility) can only move diagonally, much like a bishop in chess. Pieces are taken when surrounded by the opposition on two sides – the only exception to this rule involves Thor, who is destined to die at Ragnarok and can therefore 'swap' lives with members of the opposition.

The computerised opposition isn't quite up to game speed as yet, but Ragnarok's obvious attractions can already be seen and tasted in the two-player mode. Despite the game's superficial similarities to chess, it has its own strategies and quirks which will inevitably cause many to burn a few cans of midnight oil.

Ragnarok is most lik those players who find lating prospect, but wou a little variety of game However, others may b by the computer version beauty (and there are st 800 frames of conflict a tion to be incorporated) easy accessibility: althoug one is ever going to becor expert in a day, this is a deal easier to pick up chess itself.

Title:	Ragnarok
Publisher:	Mirage
Genre:	Strategy
Programming team:	Imagitec
Release date:	October
Price:	£34.99

reviews index

Our comprehensive reviews service starts here. Over the next 55 pages, you'll find the latest PC games fully dissected and evaluated, with clear comparisons made to similar games on the market. We've made a few changes — improvements, we think — to the way the reviews work recently, so read on to see how to get the most out of them

Specifications

PCs come in so many different flavours and configurations that finding out whether a PC-compatible game really is going to work with your set-up can be a minefield. Each review carries a detailed TechSpec column, explaining what features are supported by the game in an easy to read, at-a-glance panel.

The graphics, soundboards and control sections tell you which popular devices are supported by the game in question.

Under Disk requirements, you'll find out whether a game needs to be installed on to hard disk in order to play it, how much space it takes up if installed to hard disk, and we also note if the game comes on high density disks.

The performance section isn't quite so clear cut. Publishers often state a set of minimum hardware requirements on the box, but these can be very minimal indeed. Our optimum performance level is a subjective rating, and gives you not the publisher's base specification required, but rather the minimum we think the game needs in order to run comfortably. Game X may run on a 286, but at a snail's pace, or it may run OK on a 16MHz 286 but be unacceptably slow at 8MHz. This is where we let you know.

After the optimum speed rating, we note the minimum RAM required to run the game, and finally, how much of your base 640K RAM must be available for the game to load properly.

Shareware

The shareware reviews section is an independently written column on the best and most interesting of the latest shareware and public domain releases. Here you'll also find the Shareware Finder Service. If you have a particular software need for your PC, but don't know if such a program exists, try us. We may well be able to pin down a cost-effective shareware program to do the job for you.

Rating system

We give a single mark out of 10 to indicate what we think of the quality of the game. As a rough guideline, the ratings break down thus:

0-2	Dreadful
3-4	Deficient
5	Average
6-7	Good
8-9	Excellent
10	Staggeringly perfect

Ratings are not the sole preserve of the author of the review, but are discussed and thrashed out by everyone at PC Review who knows the game in question.

We also practise 'contemporaneous marking' (for want of a far better term). That means that games are rated relative to other current games.

The reason for this is that, while PC programming expertise is improving all the time, and Monkey Island VI will doubtless be miles better than Monkey Island II, that doesn't mean it will have to get 16 out of 10 when reviewed. By the time it arrives, if it looks excellent compared to everything else around at the time, it'll still be worthy of its eight or nine.

Alternatively

We believe games should be placed in context. You may like the sound of game Y but suspect it might be too technical, or difficult to control. We'll tell you about alternative games of a similar style, subject matter, or interface, which might be more to your taste (or warn you off those which are inferior to the game being reviewed, however superficially similar).

Two Minutes

This is the closest you'll get to seeing the game in action before you reach the shop. We take a series of manoeuvres from the game and explain clearly the gameplay required to get through the screens. You may find some helpful game hints in this section!

Title	**Birds of Prey**
Publisher	**Electronic Arts**
Contact	**(0753) 549442**
Price	**£39.99**

Birds of Prey

Fed up of the usual single plane games that keep telling you what to do? Want to have more influence over what happens in the war? Then try this little flight simulator with a difference from Argonaut

I keep thinking of a Sunday market-stall trader when I read all the media hype about Birds of Prey. "Yes, indeed, ladies and gentlemen, this amazing game will come to you with not one plane ... not two planes ... not even three planes. No, for the amazingly fantastic offer of just £39.99 you get 40 individual, state-of-the-art, all-action military aircraft. Yes, 40 planes, ladies and gentlemen! I ask you, would I lie to you?"

The fact that this is a simulator and a half, so to speak, is only half the story. Argonaut Software has kept us waiting almost five years for the release of its magnum opus, with the game undergoing several metamorphoses before arriving in this state. It started out life as Hawk in 1988, back when PCs barely had an EGA card to call their own. Released about a year ago on the Amiga and ST to mixed reviews, the main problems was a lack of decent presentation and several damaging bugs and/or faults in the programming. Now, with a year's extra work and plenty of feedback to work with, the PC version has arrived and, at first glance, not a lot appears to have changed.

But before we even come to the game I'm going to have to comment on the packaging. You open the box and are treated to an Amiga manual of all things. Nestling beneath this weighty but inadequate tome is an IBM summary pamphlet detailing the correct key list and changes to the manual. Personally, I'm offended. With there being almost a year between release of the different versions you'd have thought a separate manual could have been produced, especially when you consider that the contents of the original manual weren't exactly wonderful.

The problem lies as much in what it doesn't tell you as in the way it tells you what it does (work that one out). What I mean is that when it tries to explain an aspect of the game, such as the way the

campaign works and how you can affect it, you are more often than not left feeling more confused than when you started. Just reading through the first couple of pages you can see that there's a very good idea in there struggling to get out, you're just not quite sure how it works.
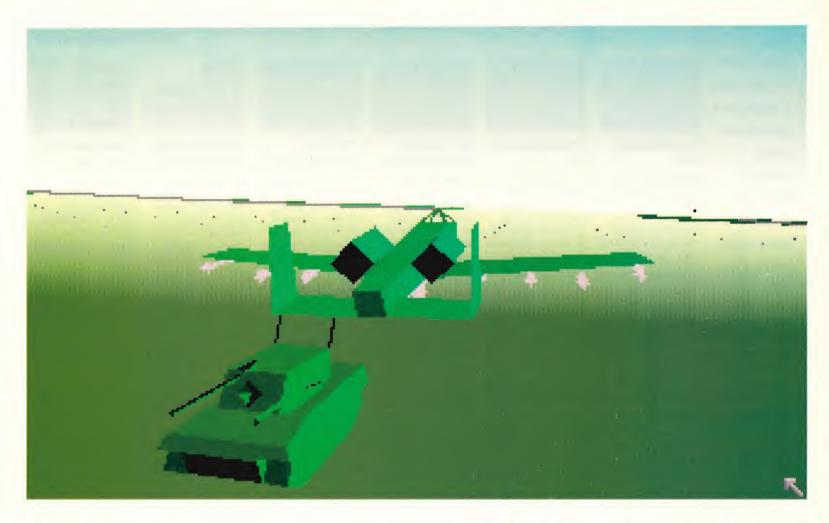
Ongoing campaign

Thankfully we can see what the idea is. Birds of Prey's main game feature (apart from the 40-odd planes) is that each mission you fly is part of an ongoing campaign. Bomb an enemy warehouse in a Tornado and when you fly over the area in a Hercules on a later mission it'll still be in ruins. You'll get to be involved in

Since the overall aim in Birds of Prey is to reduce the enemy's hardware to the point where he cannot continue, let's go for a quick dogfight to reduce the number of aircraft he has.

Starting in the hangar, your Falcon is ready to intercept the flight of enemy fighters. You've selected wingmen for this so once you've taken off, the rest of your flight will quickly follow.

all aspects of air warfare, from intercepting a fighter squadron in an F-14 Tomcat to dropping off supplies in a C-130H Hercules. Stealth bombing, reconnaissance flights, dogfights, tank-busting, if you want a certain plane for a certain task you're likely to find it in here.

In theory this would have been fine, if you had either been so involved with the campaign that you had to monitor constantly the positions of the enemy and plan missions accordingly — ie, watching a real-time map of the battle, sending up an F-16 if you suddenly spot an incoming fighter or designating a factory bombing if you see an opening — or just dealt with the missions from a pilot's

point of view — being handed your briefing and told what type of mission you'll be flying instead of choosing it yourself.

The problem that Birds currently has is that although you're told that there is an ongoing campaign, you never really see much evidence of it, save for the battle progress charts after each mission. If you select a ground support mission, you are told that there is a tank battle going on at location X. If you choose a different mission then there is no tank battle going on. It almost feels as though you are directly responsible for the enemy's attacks just because you picked a mission. You never have to react to a situation, you just provoke them.

Ground support missions more often than not involve wiping out a few tanks that are harassing 'our boys'. Make sure you identify which are the good guys and which are the bad as once a missile is launched it doesn't care whether its target is friend or foe.

The principle behind the war is that there are two sides — A and B — battling it out for supremacy over a fictitious land. Although the two sides are not supposed to represent any particular nation, side A is fully equipped with NATO hardware while side B is stocked with Soviet equipment. You can fly on either side, even changing allegiance mid-battle should you so desire, until one side is so badly damaged it has to surrender.

I must say that being given the chance to fly Soviet hardware came as quite a refreshing change (the only previous opportunities being the rather disappointing MiG-29 series from Domark and Chuck Yeager's Air Combat which
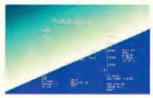
Two Minutes *of religious ornithology*

Off the runway and a quick turn through 45 degrees to close on the enemy. Birds of Prey is one of the few simulators to show your plane almost exactly as you would see it in real life.

The map shows the position of the aircraft in this battle. You're ahead of your wingmen for the moment, but as soon as you near the enemy this will change as everyone weaves about to get a target.

Missile warning! The enemy has spotted you already and initiated hostilities. Your HUD tells you the type of missile heading your way so it's time for manoeuvring of the evasive kind.
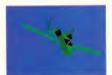
Whoops! Despite the chaff/flares, that darn missile done struck home, cap'n. You didn't even get time to bail out before you were turned into a million and four pieces. Them's the breaks.

Since you've died this campaign is effectively over. Who won the war is now irrelevant as you won't be around to celebrate or console yourself in defeat. Time to start a new pilot and a new war.

Since Birds of Prey has a variety of planes to mess around with, we thought we'd show you a few:

The Fairchild A-10A

Nicknamed the Devil's Cross by Russian troops because of its unusual fuselage, the A-10 is primarily a tank-buster and was put to good use in the recent Desert Storm conflict.

The Grumman X-29

The X-29 is still pretty much an experimental plane, having recently entered the prototype stages of development. Its most notable feature is the forward swept wing formation.

The Lockheed SR-71 Blackbird

Possibly the most famous (if not infamous) spy plane in the world — which kind of defeats the purpose really. Still, it looks mean and flies mean but is useless in a dogfight.

The North American X-15A

A real test plane here, so much so it can't even take off for itself yet. The X-15 is launched from a B-52 and when at full power can actually reach the upper limits of the earth's atmosphere.

The Northrop B-2 Stealth Bomber

Designed with the utmost secrecy in mind, the B-2 reflects almost all radar probes enabling it to strike at long distances and escape before anyone even knows it was there.

The Antonov An-124 Condor
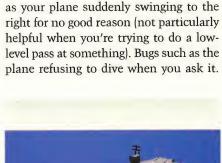
Certainly, one of the largest aircraft in the world, the Russian answer to the Hercules (for the purposes of this particular game anyway) actually has a row of 28 wheels.

I have to confess to not liking all that much either). One thing that did slightly worry me though was that choosing to fly on side B gives you a maximum of 13 different aircraft to fly as opposed to the 27 on side A. That and the worrying fact that every time I intervened in a land battle and managed to totally wipe out the enemy tanks, my own forces would still lose the battle. I can't help but feel that Birds of Prey has a slight bias towards a NATO victory.

Apart from the MiGs, the other plane that I have always wanted to fly in a simulator and never been given the chance until now is the mighty Hercules transport craft. I dunno, I've always had this thing about swooping down across a drop zone at about 20 feet in a four-engine beast, dropping off supplies from the rear door. Low-level flying in MicroProse's B17 Flying Fortress was the closest I'd managed to get — it just isn't the same.

Boyhood dreams aside, there is a fundamental flaw in the way the flight model works here. You can fly a mission in one of two modes, easy or realistic flight. Now in the latter mode each plane supposedly handles the way it would in real life. Unfortunately there seem to be a number of bugs associated with realism. Bugs such as your plane suddenly swinging to the right for no good reason (not particularly helpful when you're trying to do a low-level pass at something). Bugs such as the plane refusing to dive when you ask it.

There are six land bases and four aircraft carriers in Birds, split evenly across both sides. The simple idea is to reduce each one to an inoperative state in order to reduce the opposition's effectiveness. If he doesn't have a runway, he can't launch any planes.

One of the more interesting aspects of long-distance flight is the refuelling process. Call up a tanker, set a waypoint and fly around it until your mobile petrol station arrives. Strangely though, you don't actually appear to dock with the thing. Perhaps it just pours the oil out of its chute and you have to catch it underneath.

Bugs such as the plane suddenly diving sharply when you didn't ask it.

Now, I'm no pilot, so it could be that I'm missing some of the finer points of realistic flight. It could be that these occurrences are down to weather conditions or air pressure or some other such thing and if they are then it would have been nice to have been warned about them in advance. If these aren't bugs and are in fact flight 'features' then this is yet another example of the bad manual.

Hitting high-G
The solution to all these aerial hijinks is to switch to easy flight mode and for the most part the game is pretty enjoyable like this. What this does mean however is that you end up in silly situations such as Boeing 747s performing loops, barrel rolls and other highly unlikely combat manoeuvres. Switching to easy flight also eliminates the blackouts caused by pulling high-Gs. I have to mention this small feature of the game as compared to the blacking and redding out effects seen elsewhere, to just have a game that flicks straight into a totally black screen is a bit disconcerting. The first time I thought the machine had crashed and reset it before I realised what had happened.

In easy flight every plane behaves in exactly the same manner and having more than 40 planes all flying in the same way kind of defeats the whole purpose. Still, it's either that or suffer the limitations of realism. At least you can pretend you're flying differently by switching to the external views and flying from there.

Actually, the external views — and the graphics in general — are very nice indeed. In a sense you have complete freedom to look at the game from wherever you so desire. Fly with the cockpit on or off, fly with an outside view of your plane on or

How To Shoot A Tank – Lesson No. 3. First aim it in your sights and get a Locked-On rectangle in your HUD. Next, let loose a tube of fiery death, making sure you point it in his direction. Thirdly, watch as his previous impregnable shell is blown apart.

off, even fly with both the cockpit view and an outside view turned on. The combinations are endless ... sort of (ie, full camera rotating is available, whether you are in or out of your plane).

With so many planes to cater for, you'd expect the graphics to be pretty good. Each plane looks on the whole like it should do, bulky cargo planes look big and chunky while nippy little interceptors look small and sleek. Even the oddly-shaped planes like the SR-71 Blackbird, the B-2 Stealth Bomber and the A10 Thunderbolt resemble themselves. Ground detail, while sparse in most areas, is fine when you get to it and the vehicles look a lot better than those seen elsewhere. (Interesting fact No 1: those of you that remember the game in its previous incarnation — Hawk — will no doubt recall some slightly better looking graphics. Patchwork landscapes, huge multidimensional skyscrapers, multiple terrains. Since then it has undergone some dramatic changes in style and none of those features appear in the finished version).

Enough about the graphics. Take us through a mission you cry and so I shall, analysing the game's content as we go. The

first thing you notice upon loading is the distinct lack of presentation. I've said it before (last month to be precise) and I'll say it again. British flight sim designers, while managing to get to grips with the core of a game, have no idea of decent presentation — or if they do then I've yet to see real evidence of it

Intro sequence

Birds starts with the typical copy protection screen, asking for information from the manual, then arrives at the pilot record screen where you fill in your details. Now so far this is no better and no worse than your average MicroProse sim, bar the lack of a decent intro sequence. But as I said earlier, the only information you've had about what your role in this game is to be has come from the spartan manual. At the moment your excitement glands are hardly swelling and being presented with what looks like little more than a statistic screen hasn't helped.

A click of the 'Next' button and we're off to select a mission. Things start to look up here as you have the choice of 12 mission types to choose from. One thing I would have liked before I'd come to this

One thing you don't often get to do in flight sims is low level supply drops. The Hercules (pictured here) or the Antonov 124 are used as they both have rear doors to open. The trouble with supply drops is that you have to get extremely close to the ground to avoid damage.

stage, especially as my campaign started to roll along and I needed to be more aware of what side B was doing, was some kind of battle progress map showing the known positions of enemy forces, etc. You can get a battle progress report from the previous screen but this is little more than a bar graph showing the percentage of both sides' still functioning hardware.

Selecting, let's say, an air superiority mission takes us to the base selection screen from where, surprise surprise, you select

Alternatively...

Chuck Yeager's Air Combat
Electronic Arts, £34.99
Technically this multi-plane game is superb with smooth graphics and an accurate representation of planes from many eras of military aviation. What makes it a particularly nice product is that you can play mix 'n' match with the planes, putting, for example, a Phantom up against a Messerschmitt ME-109 (now there's a challenge). Personally I just found the whole thing slightly dull. Sorry.

JetFighter 2
US Gold, £39.99
A game not unlike Birds in easy flight mode. Three modern planes to choose from and graphics almost as smooth as Chuck Yeager's. It's got a nice scenario too in the skies of San Francisco after an invasion by drug barons from the south. Don't expect an accurate re-creation of flying an F-14, but this game will keep you on the edge of your seat with all the power of Superglue 3.

Secret Weapons of the Luftwaffe
Lucasfilm, £40.99
A multi-role campaign game with another difference. The planes are experimental German fighters and bombers and the campaign is World War II. SWOTL is a surprising flight simulator, a strange idea that actually works really well. Everything has the usual Lucasfilm professionalism and polish and the graphics look a little bit odd compared to most other sims, everything is very playable too.

A.T.A.C.
MicroProse, £TBA
Interestingly, Argonaut Software, the team that programmed Birds of Prey, is just finishing another multi-aircraft, ongoing campaign simulation, this time for MicroProse, (with just one plane, the F22, but you can add Apache helicopters to the arsenal). In command of a specialised strike force, you must stop the drug barons of South America. Full review next issue.
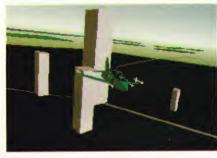
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Back when Birds of Prey was called Hawk, it was making some pretty bold claims about its capabilities. The bottom picture shows a sample of what was promised, the top picture is what we've finally got.

which base to fly from. It's at this point that you also decide which side to fly for. This could have been made into the battle screen I was asking for. You get a map of the combat area and the positions of bases, cities and radars. Bringing this screen up before the mission selector and a little bit of extra planning and this could easily have included enemy troop information and been just what you or I needed to make that mission selection.

Next up comes the plane selection screen, and with it another slight anomaly. Although you know what type of mission you're flying, you don't yet know the details and so choosing an appropriate plane is slightly tricky at this stage. More than once I chose one fighter only

Flying high above the Earth in the very latest piece of hi-tech hardware – the X-15 experimental aircraft. From 80,000ft the view is panoramic, unfortunately your fuel tends to run out rather quickly. Best get down and fast.

PC review **5**

to be given my mission details and realised that I really should have taken another. Unfortunately once you've chosen your plane, you're stuck with it.

Out of the hangar

Mission details next and we are told that there are three incoming fighters and we have to destroy them. A quick check of the map to see their positions and we're off to arm ourselves appropriately, then it's out to the runway to begin another day's action and adventure. Actually, it's less out to the runway, more out of the hanger. Unusually for a flight sim, you actually get to taxi your plane from its storage bay to the edge of the flight strip.

The first thing you'll probably notice is that despite the number of different planes, you only get one cockpit, which, with all its dials and switches, looks as though it belongs in a Boeing 747 than a combat aircraft. I actually found the best way of flying the plane was to turn the cockpit off and just have a forward view with a HUD. The HUD itself is very detailed and provides you with practically everything you need to know, from amount of fuel left and how far you'll be able to fly at the present speed until it runs out, to the position of your enemy.

When it comes to dogfighting and the need to switch targets in a hurry, the game comes to another irritating fault. There is no key to switch simply through targets, annoying when you're locked on to one of your wingmen and you want to change quickly to the incoming MiG. The actual process of manual target selection is done via the mouse and while it's a nice idea in theory, once again the practice is cumbersome.

What is nice about dogfighting, and all the missions in general come to that, is that the enemy behaves very realistically. I don't think I've played a flight simulator before that has had such intelligent computer-controlled opponents. Part of this is the fact that they have exactly the same equipment that you would have and they use it intelligently.

Unlike other sims where once a missile has been launched towards them they are practically sitting ducks, they use flares, chaff and evasive flying to lose it and you're not always guaranteed a kill. They do feel as though you've just linked a couple of PCs together and are flying against human-controlled pilots. It's one of the nicest features of this otherwise disappointing game.

Yes, I am somewhat disappointed and saddened by Birds of Prey. As is often the case with ambitious games there is so much potential there for something wonderful but it simply doesn't work well in the present form. It's kind of odd because, truth be told, I actually quite like flying around with the game, despite its limitations. It reminds me of JetFighter in that the only way to play and enjoy it is to put it in easy mode and just have yourself a combat simulator.

Don't get me wrong, I'm not saying it's better than JetFighter, just similar. Even though I'm only rating this as an average game, I seriously would try it out before you write it off completely (and before you buy it). I know people who absolutely hate the thing and just cannot forgive its faults, but, on the other hand, I've experienced it and, like I say, quite enjoyed it. Just try it first.

■ *Paul Presley*

Tech*spec* Although you don't actually need any extra memory to play the game, if you have it then it will be used to speed everything up. The amount of free base RAM necessary depends on your set-up. 501K is the minimum you'll need — which is for non-digitised effects and EGA graphics. The amount of hard disk space taken up, below, is not a misprint.

Disk requirements

High density			✗	
Hard disk only			✓	
Space taken on hard disk			480K	

Graphic modes

CGA	✓	EGA	✓	Tandy	✗
VGA	✓	SVGA	✗		

Soundboards

Ad Lib	✓	Roland	✓	Sound Blaster	✓

Control

Joystick	✓	Keyboard	✓	Mouse	✓

Performance

Optimum speed	16Mhz
Minimum memory	640K
Base RAM required	501K

Title	The Lost Files of Sherlock Holmes:
	The Case of the Serrated Scalpel
Publisher	**Electronic Arts**
Contact	**(0753) 549442**
Price	**£39.99**

"I do believe we are about to become the subjects of yet another computer game Watson" ...

"My god Holmes, how on Earth" ...

"Elementary, my dear Watson. Certain gentlemen from Electronic Arts have been making enquiries about your unpublished journals ... Come along Watson, we have no time to lose!"

The Lost Files of Sherlock Holmes:
The Case of the Serrated Scalpel

Inspector Lestrade: Scotland Yard's foremost detective. He and Holmes have had their differences on occasions.

Wiggins, the leader of the Baker Street Irregulars. He and his grubby chums are always willing to help.

Sherlock Holmes has been a natural target for the pens of computer game designers. The antics of the world's first and most famous consulting detective actually translate fairly well to a computer format. The computer provides the crime and a series of clues and the player, donning deerstalker hat and stuffing his pipe with shag, deduces the criminal, motive and circumstances of the crime. Even a text-only environment could be used to fulfil those functions quite adequately. Indeed the earliest efforts, inluding the Spectrum game Sherlock, from Melbourne House, were largely text based with the occasional graphics thrown in. They were a far cry from the all-singing, all-dancing CD-ROM game recently released by Software Toolworks, and indeed from this disk-based game from Electronic Arts.

EA has chosen, wisely I think, to confine this initial game to a single case. I say initial because a series of games, each with a different case, are planned for the near future. As the title of the series suggests, none of these scenarios are based on Conan Doyle's original books, although the characters and settings are all faithfully reproduced. That can only be good news for Holmes aficionados; why play the game if you know the plot?

One infamous character, who wasn't Conan Doyle's creation, but makes an appearance, even if only as a suspect, is Jack the Ripper. The case begins with the murder of an actress outside the theatre at which she worked. The crime has all the hallmarks of the Ripper's works, and Inspector Lestrade of Scotland Yard is convinced that Spring-Heeled

"As I have often explained, Watson, the truly inspired detective does not rely on luck. You claim there is little we can deduce from this scene, apart from the fact that a grisly murder has taken place, but look a little beyond the surface ...

... and there is much we can determine about the nature of the crime and the perpetrator. First, let us examine the body of the unfortunate victim.

Jack has strayed from his usual haunts in Whitechapel. Holmes has also been invited to try his hand at solving the case, but he doesn't share Lestrade's conviction that this is the Ripper's work.

Sampled speech

Finding out who committed the murder and why is your responsibility as you step into the shoes of Sherlock Holmes, with your trusted sidekick Dr Watson following your every move. The story thus far is protrayed in a very attractive animated intro sequence, which is marred only by the poor quality of the sampled speech.

Players of the Lucasfilm or Sierra style of graphic adventure will instantly be at home with Holmes. The top two-thirds of the screen are given over to a graphic representation of the current location, and as per most graphic adventures, you can manipulate these using the mouse-driven cursor. Along the bottom third of the screen all the verbs you require to play the game appear. These are exactly the sort of thing you might expect if you're an experienced adventure player, from 'look' for examining objects to 'talk' for communicating with other characters. Talking also works in the same way as it does in Lucasfilm's SCUMM system: the player is offered a choice of phrases and must select the one he feels is most appropriate to the situation. In fact, the similarity with the Lucasfilm engine is very strong but for the missing inventory – this has to be called up separately.

The system is, on the whole, quite intuitive, and most players will cope with it even without reading the detailed manual. When the cursor is passed over an object of interest it is identified in the status line and an appropriate verb is automatically selected.

It's nice to be able to just click on Dr Watson and have the program assume, quite reasonably, that you want to talk to him rather than pick him up or something equally stupid. When you need to use the inventory this is displayed as a long strip of icons along the bottom of the screen, with a list of appropriate verbs above it. This is a bit more clumsy than having a scrolling inventory on screen all the time, as is the case with SCUMM, but it certainly doesn't make life, or investigation, impossible.

Configuration screen

A very considerate, and, as far as I'm aware, unique inclusion to EA's system is a configuration screen in which you can adjust most aspects that govern the way the game behaves, right down to the font used for text and which mouse button is used with the auto-verb feature. This sort of thing doesn't require a tremendous amount of additional effort on the part of the design team and programmers, so it would be nice to see other development teams following EA's lead.

There are other nice new elements as well, like the inset, close-up pictures of characters' faces when they are speaking. This enhances the characterisations quite a

Jonas, the newspaper vendor: he keeps old papers before sending them back to Fleet Street, so he's a handy way of catching up on old news.

Constable O'Brien – this fine upstanding member of the constabulary is merely intent on guarding the scene of the crime.

Two Minutes *of scientific deduction*

Immediately we can see how savage this attack has been. Note, in addition to the ragged knife wounds, the curious abrasions on the neck and arms.

Notice the singular attitude in which she is lying, my dear friend. I deduce a sudden attack. The poor woman hardly had time to struggle against her assailant.

And here, something which my learned colleague seems to have overlooked, a white powdery substance which I must analyse on our return to Baker Street.

This crate looks a likely hiding place for the fiend, and indeed, Watson, I see he has been careless enough to leave his cigarette butts lying here.

And before we question the witness, Watson, let us check inside the crate. For who knows what may be revealed within its dark and dank interior?

The coroner will happily let you view the victim's body but is very cagey about handing over her possessions.

Fredrick Epstein, the opera manager He seems reluctant to cooperate with you. Could it be that he has something to hide?

bit. After all, the half a dozen pixels that top each sprite don't actually convey much about someone's appearance and personality, do they?

The most significant additional feature is Dr Watson's journal. The good Doctor spends much of his time furiously writing in his notebook. He keeps track of each location you visit and any conversations that took place there, even accurately recording banalities. You can refer to his journals at any stage of the investigations to remind yourself of clues. The problem is that the journal soon becomes massive, with pages stretching into triple figures. A search function is included, however, so you can quickly find references to a subject of interest.

This journal-keeping is by far Watson's most admirable contribution to the investigation in hand, since when questioned on anything else he can usually manage little more than a backhanded compliment, though he does come in handy every once in a while for other investigative tactics, such as creating a necessary diversion.

Scrolling map

When you begin your investigation there are only two locations you can visit: your rooms at 221B Baker Street, and the alley behind the Regency Theatre, where the actress, Sarah Carroway, was murdered.

Whenever you leave a scene you are shown a scrolling map of central London in which each place you can currently visit is highlighted with an appropriate icon. Click on wherever you wish to travel to and your hansom cab will weave its way through the city streets to get there. This

Holmes and Watson at home inside the most famous fictional London residence, 221B Baker Street. Note the tribute to Her Majesty in the wall, created during Holmes' indoor shooting practice.

looks quite attractive the first couple of times you see it, but the repetition soon becomes tedious.

As you collect clues and leads in each location, further locations are made available to you. The questions that you can ask each of the characters will also change as you discover new facts. It pays to be methodical and diligent in your investigation. I found myself able to ask questions of some people on subjects that I hadn't realised I knew anything about, and the investigation, not to mention the investigator, tended to become very confused as a result.

To be fair, the game does attempt to help you along by giving you very heavy handed hints if you are about to miss something vital. In the Regency Theatre, for instance, if you try to leave without questioning the chief witness, Watson will offer to sedate her to make the interview easier.
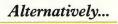
Sheila Parker, the actress, is too distressed to talk, and yet, as Sarah's understudy, she has everything to gain.

Inspector Gregson: despite having to spend much of his time sifting through files in Southwark Morgue, he's happy to be of assistance.

Alternatively...

Augie, the apparently blind vendor, can regularly be found peddling his wares outside Scotland Yard and knows more than most about the workings of the Met.

Sherlock Holmes Consulting Detective
Software Toolworks, CD-ROM only, £40.00
This CD-ROM spectacular not only features three different cases for you to solve, it also boasts 90 minutes of full motion video with digitised speech and sound. The results are certainly impressive and beneath the gloss there is actually an extremely absorbing and entertaining game.

Cruise for a Corpse
Delphine/US Gold, £30.99
Murder and mystery on the high seas as a Greek shipping magnate is killed aboard his luxury yacht – and whose body then promptly disappears. Cruise is a thoroughly absorbing and complex game which will enthrall whodunnit fans. It's also slightly quirky thanks to the occasional odd translation from the original French into English. Highly recommended, though.

Indiana Jones and the Fate of Atlantis
Lucasfilm, £37.99
If you fancy a graphic adventure which requires you to solve a mystery, but you are not a great Sherlock Holmes fan, then why not bag a copy of Lucasfilm's latest Indy adventure? It's the best graphic adventure we've seen to date, and there are plenty of mysterious locations to be investigated.

Lesley, the flower seller, is a kindly and naive soul, but she may well have information that is vital to you.

As your investigation proceeds, more locations in central London will become available to you. You can travel to each via hansom cab. Occasionally you will be required to travel further afield, without the help of the map.

The tiny laboratory bench in the corner of Holmes' flat is where he does all his chemical analysis. You will need to master the use of the apparatus if you are to solve this mystery.

Objects are manipulated by calling up an inventory strip at the bottom of the screen. Here, objects can be used with each other, or with other items within the screen.

This should, in theory, mean that you won't have to revisit a place unless you have some new evidence to follow up. In the event of a return visit, it will soon become obvious, however, if you are barking up the wrong tree. Usually, if you try to question a character again who has no more information to give you, the only option open to you is to say something startlingly banal like "How are you, today".

Another significant aid in your task is the gang of street urchins known as the Baker Street Irregulars, led by the cheeky Wiggins. For the price of some confectionery, Wiggins and his cockney crew will be quite happy to run errands for you, usually finding something or tracing the source of a piece of evidence.

Finally, the faithful hound Toby can be relied upon when there are criminals to be sniffed out. Although not formally trained and not of pedigree birth, Toby is universally agreed to be the finest sniffer dog in the

whole of London and will quite happily put his olfactory senses to good use when unleashed.
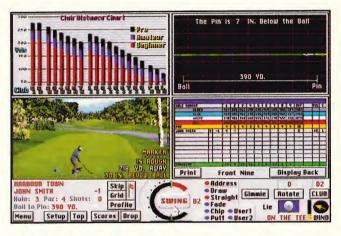
In the course of your investigation you may be required to depart from the usual formula for solving a crime, even by Sherlock Holmes' standards.

In the Moongate pub, for example, you may find yourself having to take on the regular customers in a darts match. This leads to a complete sub-game in which a dartboard and blackboard for scoring fill the screen and you control two bars to determine how your dart is aimed. This actually works a lot better than any of the standalone computer simulations of darts I've seen. All right, it isn't at all essential to the plot, but it does provide a interesting diversion.

Animation

In general, the process of investigation is thoroughly absorbing. Every now and again you are rewarded with a set piece of animation, like the moment in which you apprehend the first vil-

Henry Carruthers, the stagehand, seems quite upset at Sarah's death, but how much does he really know about the circumstances?

Mrs Worthington, the opera owner, was Sarah's friend and owner of the opera house seems strangely unperturbed at her death.

The publican can be a bit surly and has a dubious background, but he's a mean darts player.

lain of the piece, or witnessing the opening of the opera at Chancery Opera house. The main difficulty with the game is that the player isn't really left to deduce much since the program does most of the groundwork for you.

Does that sound odd? Well, consider this. Each time you come across a major piece of evidence, the computer automatically makes any relevant locations available to you and automatically updates the list of questions that you can ask people. To be fair, it does set you up with one or two false leads, but as long as you rigorously examine every object in every location you are guaranteed to make some progress, even if you're the sort of person who puts two and two together and comes up with three.

This is unfortunately a constraint of the system as much as a fault of the plot writer. As boring as you may find text adventures, one thing they've certainly got going for them is that they really do involve some brainwork – the possibilities seem endless, even if they may actually be quite limited.

Some of the scenes require traditional adventure style play: find the rope, tie the rope to the scaffold, climb on to the scaffold, open the window, climb through the window, go down stairs, open the door for Dr Watson, and so on.

And just in case you're wondering, that sequence doesn't occur in the game, so I

Tech*spec*

Sherlock Holmes is a hefty game and you'll need to squeeze 600K of free RAM in order to play it. A sound card is highly recommended for the music, although the sampled speech is not as good as it might be. You'll need at least a 286 to play.

Disk requirements						
	High density			✓		
	Hard disk only			✓		
	Space taken on hard disk			13.5Mb		
Graphic modes						
	CGA	✗	EGA	✗	Tandy	✓
	VGA	✓	SVGA	✓		
Soundboards						
	Ad Lib ✓		Roland ✓		Sound Blaster	✓
Control						
	Joystick ✗		Keyboard ✗		Mouse	✓
Performance						
	Optimum speed			20MHz		
	Minimum memory			640K		
	Free RAM required			600K		

Lars Sorenson The sullen assistant to George Blackwood would rather not speak to you, but you need his help.

Old Sherman The sleepy old pet shop owner is a longstanding friend and is happy to lend you the faithful hound Toby.

At one point in the game you may even be required to try your darts skills against the regulars at the Moongate pub in Covent Garden.

haven't given anything away! These particular sections actually work very well and provide a nice adjunct to the more cerebral detective work.

With the possible exception of Software Toolwork's CD-ROM product, this is the best computer game interpretation of the great detective's exploits to date. The graphics throughout are good, when they are not stunning, and the soundtrack is always appropriate, if not always inspiring. Concentrating on one case has made it quite rich and detailed, and consequently more of a challenge than it might otherwise have been, and the limitations of the system are certainly outweighed by the excellence of all other aspects of the game. If you're a Sherlock fan, or you just love graphic adventures, then my guess is that this won't disappoint you.

■ *Laurence Scotford*

PC*review* **8**

Inset pictures are used when you need to examine groups of objects, as here in Southwark Morgue, where you want to take a closer look at the victim's personal possessions.

Title	**Moonstone**
Publisher	**Mindscape**
Contact	**(0444)246333**
Price	**£30.99**

Dour druids, holy knights and fire from the sky. Not a Guns and Roses concert but an ancient religious ceremony to herald the start of the Moonstone quest ...

Moonstone

This is what the kids want: mass violence with plenty of blood. Mindscape gives you the chance to damage your psychological profile

Blood, guts, death, gore ... this is what games should be like. Healthy releases of aggression in ultra-violent ways. So why have I played the majority of Moonstone with the gore option turned off? I don't know, maybe I'm squeamish. Maybe I'm trying to see if there's a decent game behind the novelty appeal factor of all the blood 'n' guts.

What is the game? Moonstone is the tale of a mystic ceremony performed in a distant fantasy land (where else?). Four knights search for pieces of a magic key, used to access the guardian's lair from where they can obtain the mystical moonstone, used to gain ultimate power. Monsters live throughout the land in various lairs, a dragon sweeps across the sky looking for a tasty canned meal (ie, you) and wizards and prophets offer magical advice and special weapons. Yeah, yeah, you've

This is the land, split into four, into which the brave knights (and knightesses I suppose) must venture. Swamps, desert plains, heavy woodland and rolling hills are the settings, with danger around every corner. Two towns provide shelter, a place to buy equipment and a place to gamble away your gold.

heard it all before in a million and one other fantasy game plots, and perhaps in a sense it is somewhat old hat, but it does have one key feature. Notice I said four knights. Four knights means four players and as Epyx's Games series proved, put a group of people around a monitor and any game will be fun.

It plays two ways, firstly as a single player hack 'em up with a basic amount of strategy. In this mode the game is fairly entertaining for a while, but doesn't really do anything to get the blood pumping (sorry, obvious pun). Part of the problem is that there just isn't enough variety in the game, since sub-options such as visiting a town or gambling at a tavern do little to add to the game.

Another foible is the way the computer opponents act and the fact that you have to wait until they make their moves as though they were being controlled by separate entities. As soon as you gain a key they all home in on you, although quite how they acquired this knowledge is beyond me. It might have been better to hide their positions until they were within a certain range, thus increasing the menacing atmosphere and adding to the challenge.

Tech*spec* Unusually for a PC game there is no mouse support, although joysticks and keyboard controls are fine. For the Sound Blaster samples you will need to include the Sound Blaster setup line in your Autoexec file. The SBPro's manual explains how to do this on pages 1-11 to 1-12.

Disk requirements

High density	✗
Hard disk only	✗
Space taken on hard disk	**2.2Mb**

Graphic modes

CGA	✗	EGA	✓	Tandy	✗
VGA	✓	**SVGA**	✓		

Soundboards

Ad Lib	✓	Roland	✓	Sound Blaster	✓

Control

Joystick	✓	Keyboard	✓	Mouse	✗

Performance

Optimum speed	**16MHz**
Minimum memory	**640K**
Free RAM required	**380K**

Full moon and a cloudless night, the start of the sacred quest. Four holy knights are battling to be better than the rest. To fight a horde of loathsome beasts, peril lies ahead. But should their swordplay falter, they're likely to be dead.

Stonehenge marks the end of the druids' lengthy flight. This is just the start though, so they keep their flames alight. Their chanting rises upwards, 'til a mighty crescendo roars, nothing to do with the ceremony, but it brings in the coach tours.

The big chief gestures wildly, he waves his hands at the sky. Complex chants and signs invoke the power of those on high. Lightning cracks across the sky, thunderclaps are heard. Then dead silence, not even the chirp of a bird.

The first knight awaits his fate, weapons sharp and clean. He barely breathes while waiting for the druids at the scene. He knows what awaits him, the danger that's in store: the horror of this holy quest or the call-up to the war.

The other method of play is, as I said, the rather more entertaining multi-player 'board game'. One to four people aged 12 or above – the box actually carries a Voluntarily Rated PG-12 sticker — which will no doubt have the opposite effect to that indicated and make the kids to rush out and buy it.

As soon as you start playing you can't help but feel that it's a completely different game. The areas that didn't do much for the single player (gambling, towns, temples) actually work pretty well here, increasing the amount of options you get during your turn. Now that it's a multi-player game, there is also more incentive to play again, perhaps with different people. Plus, and this is the most obvious advantage of a game of this type, you get to beat each other up in all manner of gory ways.

Despite all this, I'm sure Moonstone was neither designed or programmed with this tabletop feel in mind. It smacks too much of a standard hack 'em up game that just sort of grew in the design stages. The variety of attacks, the very fact that it supports joystick and keyboard but not mouse, it all points towards arcade gamesville. And of course there are the graphics.

Don't worry too much about all the talk of goriness and blood. The graphics are a wonderfully comic sort of violence and though they do tend to go a little over the top at times (bodies being squeezed like toothpaste tubes before the head pops off the top, huge furry monsters landing on top of you and sending your limbs scattering), the fact that your knight is instantly up and running again the very next second puts it all in a similar vein to Tom and Jerry (although it's closer to The Itchy and Scratchy Show, The Simpsons' wonderfully violent send up).

Compared to other computerised board games, all this action and arcade-like

Attacked by a load of Baloks. Sir Edwin finds himself in a sticky position, about to be mauled by a hairy, jumping beastie with a taste for human flesh. The Balok is just one of the eight creatures used to smear blood across the screen and gross out the audience.

PC review

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Alternatively...

Golden Axe
Tronix, £9.99
Golden Axe is more or less the combat sections from Moonstone minus the blood. Converted from the original coin-op it's a reasonably good arcade game for the PC.

As with the bloodfest that's the main focus of this review, you can play Golden Axe two ways, as a kind of gladiatorial arena or as a scrolling arcade romp.

Hero Quest
Gremlin, £29.99
Hero Quest is more or less the board game elements from Moonstone minus the blood ... and including a board. A direct conversion of Games Workshop/Milton Bradley's successful tabletop game, Hero Quest is maybe a little to direct. Excitement is unfortunately non-existent, all combat being resolved by the computer rolling a set of dice.

mayhem actually works. I'm put in mind of Gremlin's Hero Quest and Space Crusade games. The trouble there was that you had these wonderful looking monsters and heroes running around, but should any of them get into a scrap, out came the dice and the player was left feeling somewhat detached from the action. Here you know that the only way you'll succeed at the game is by applying your own skills and reflexes.

I'm not saying it's perfect, far from it. There are plenty of areas that could have been improved with a little thought and attention. Not giving out so much gold in one go, including a wider range of weapons and armour to buy, giving different players different skills to work with. A lot of the standard elements of fantasy board games are missing, which just adds weight to the arcade game design theory.

Moonstone is not a solo game, no matter what features it has. It took me around two hours to complete it and there wasn't much incentive to return. Moonstone *is* a multi-player game, and a damn good one at that. I wouldn't call it an essential purchase and if you figure that you'll only get a couple of four player games out of it, I'd recommend some kind of real board game. If you can see yourself playing it on a fairly regular basis though, then you're in for a lot of fun.

■ *Paul Presley*

Title	**KGB**
Publisher	**Virgin Games**
Contact	**(081) 960 2255**
Price	**£39.99**

In your first mission to investigate ex-KGB agent Golitsin's business dealings, you have acquired a micro cassette belonging to Golitsin. This sequence also appears on this month's cover disk version of KGB, so read on if you need help.

Illegal private enterprise is apparently rife in post glasnost Moscow, with even KGB agents in for a share of the booty. You, as Maksim Rukov, the new boy in KGB Department P, are the man chosen to investigate and stamp it out. While the criminal activities in the plot are hardly hilarious — murder, double agents and wheeler dealing — the dialogue and illustrations are presented with tongue firmly placed in cheek, suggesting a parody of Moscow life rather than the real thing.

Designed by Virgin's French software team Cryo, KGB is a graphic adventure with the sort of easy to use point and click interface that we've come to take for granted. Your actions, responses and conversations are selected, multiple choice style, from menus rather than typed in. The interface has a few neat touches which raise it above the norm and make playing smoother and simpler.

Firstly, your 'smart' cursor (ie, it says 'look' if you need to look, 'talk' if you should be talking, 'knock' if knocking is the next obvious action, and so on) will flash if 'looking' over something that demands closer attention — usually an object to pick up and stow in that most

KGB

Set against the turmoil of Soviet perestroika in 1991, KGB is a tongue in cheek adventure with you as Rukov, a newly-promoted KGB agent

convenient of containers, a bottomless pit of an inventory. Secondly, the game has a rewind facility, so that, at no detriment to your score, you can replay the last few scenes — useful if you want to recap your mission instructions, for example. Also, if you undertake a course of action which proves fatal, you don't have to start the whole game again, or even the same level. You can 'backtrack', so that you

Soviet high rise living: somewhere in this dingy apartment block is the man known as Hollywood.

Inspect the corridor.

Tech*spec* KGB runs smoothly on lower speed machines, although it is VGA only. Speed of cursor movment and text scrolling in the game is adjustable. A mouse is essential.

Disk requirements

High density	✗
Hard disk only	✓
Space taken on hard disk	**2.8Mb**

Graphic modes

CGA	✗	**EGA**	✗	**Tandy**	✗
VGA	✓	**SVGA**	✗		

Soundboards

Ad Lib	✓	**Roland**	✗	**Sound Blaster**	✓

Control

Joystick	✗	**Keyboard**	✗	**Mouse**	✓

Performance

Optimum speed	**12MHz**
Minimum memory	**640K**
Free RAM required	**550K**

First, you hop across Moscow and go home to Uncle Vanya's and the refuge of your own bedroom. You should collect as many movable objects as you can find in here; you'll need them for the next instalments of the tale.

You can 'use' the items in your inventory on each other. Here you want to fit batteries into the cassette player, then use the tape on the player. The right hand mouse button will show which actions are possible.

Sure enough, you can hear the message Golitsin dictated into his cassette recorder, and a mighty compromising one it is too, what with and business deals in seedy clubs being arranged.

You have until 6.00pm to complete this first mission and you make it back to Department P with some time to spare. Major Vovlov should be pleased with your progress this afternoon.

Visiting the argumentative Belussovs is a traumatic experience. Their cramped apartment is typical of the depiction of interiors throughout the game.

a deft blend of scenic landscapes — drawn up from actual pictures — and clearly, idiosyncratically drawn close-ups, plus suitably atmospheric musical set pieces. Incidentally, the whole product is quite clearly destined for CD-ROM (the compact disc release is due out before the end of the year) with wobbly lip-synching already in place and ready for some Moscow accents when speech takes over from text on CD.

Ease of use and extra facilities apart, the gameplay in KGB is standard adventure procedure: you diligently visit each location, examine everything, collect everything, talk exhaustively to any computer generated character in your path, and then do it all over again in the right order until you complete the puzzle within the time limit. Nonetheless, KGB is a particularly playable and fascinating game of this type.

■ *Christina Erskine*

The close-up pictures tend towards caricature in places, but give the game a distinctive look and feel.

restart just before the most recent series of actions, which makes you much more willing to experiment with different lines of investigation without ending up with lots of fruitless saved games taking up hard disk space.

From the start, the premise of the game is tantalising. Historically set in summer 1991, in the weeks leading up to the attempted coup, your first mission is to investigate the circumstances surrounding

the murder of former agent Golitsin. It soon becomes apparent that Golitsin was just one player in a much wider conspiracy, involving murder, drug-dealing, kidnapping, and eventually, the overthrow of President Gorbachev. Your job, of course, is to unmask the conpirators and thus rescue the Soviet Union from the Communist hard-liners.

Cryo's Moscow is peopled with colourful and largely taciturn characters, with

These Moscow scenes were taken from actual pictures. In a much different style to the interiors, these are used when you travel from one part of town to another.

Preview

7

Alternatively...

Crisis in the Kremlin
Spectrum
Holobyte/MicroProse,
£39.99
Also set in the Soviet Union in recent times, this strategy game pits you as Gorbachev, given all the pressures of a failing economy and civil unrest, to see if you can avert the break-up of the Soviet Union. Intriguing played as a 'what if?' scenario, but more of a simulation than a game.

Floor 13
Virgin Games, £34.99
Shenanigans at the highest governmental level and you have to solve it, but this time it's set in Britain, and plays like that flurry of English political drama series that went out on Channel Four round about the time of Thatcher's resignation. Also, bizarrely, depicted in monochrome no matter what your monitor's capabilities, for extra film noir effect.

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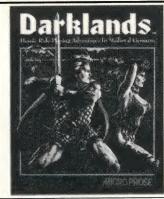
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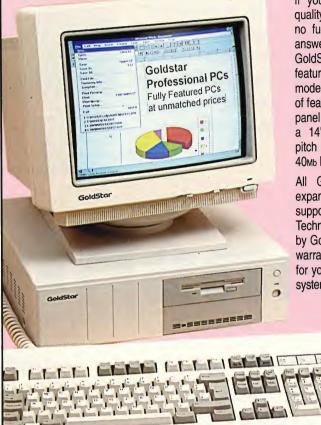
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Title	**Championship Manager**
Publisher	**Domark**
Contact	**(081) 780 2222**
Price	**£29.99**

It's tough at the foot of Division One: morale is low, there's an injury crisis and the confidence of the board is decreasng rapidly. Step behind the glamour into the muddy world of Championship Manager.

There's no such thing as an easy game, Brian, especially not away to Villa, who are top of Division One. Palace, however, are 18th, with a goal difference like this month's British trade figures.

Championship

Football management games are enjoying something of a renaissance at the moment. After Software 2000's The Manager in the summer, along comes Domark's Championship Manager, just in time to take advantage of autumnal enthusiasm for the new Premier League set-up before it all gets bogged down in the mud by Christmas.

Except that, curiously, the Premier League isn't in Championship Manager. You're stuck firmly in the good old days of Divisions One to Four, none of your players will get caught out by the new back-pass ruling, and ancient institutions such as the Rumbelows Cup are still in force. Fair brings a tear to the eye.

Football management games run on much the same lines. You choose the team, based on 80 out of the current 92 in the premier and football league divisions, you wish to manage, select the

The recent glory days of soccer revived, when Division One was Division One, and matches weren't played on Sundays, courtesy of Domark and Championship Manager

If you get tired of the green digitised background picture, there's always this multicoloured affair as an alternative. You can change the brightness level to avoid eyestrain.

Background Picture

Exit

players in the team according to their various computer-assigned ratings (qualities such as flair, passing, tackling, pace, etc) and the position they should play, and then sit back with your feet up to watch how they get on against computer-generated opponents.

Spirit levels
In The Manager, team selection and tactics is allied with financial management of the club, so that you can't buy your way to success until you've earned the money first. The Manager also includes some rather appealing 256-colour match highlights, so that you can see your goals and near-misses.

Championship Manager's match highlights are a set of wobbly spirit levels, indicating how well your defence, midfield and forward line are doing against the opposition's. The game is based more on team selection and tactical buying on the transfer market than the ground improvements, setting admission prices and choosing expensive training camps favoured by The Manager.

There is a worrying trend emerging in simulations towards excessive authenticity. In the days when PCs were incapable of rendering anything that looked remotely like an aeroplane or a finely honed athlete, players were content to take on the role of the red dot, jump in at the deep end, and thrash away against the yellow and blue dots for supremacy.

Now, computer simulations have accepted that, just as in real life, training is needed to achieve peak performance. In Ocean's Espana — The Games, in order to take part in any events, you had to take your computerised puny weakling and pump iron until strong enough to compete with the world's best. In Championship Manager, it could well take from August to May to complete a season's football.

The first signs that this is the case come, after installing the game to hard disk, when you select the 'new game' from the opening menu. One should know, really, that the 'quick start' option is there for a reason. I set about setting Championship Manager up on a trusty 286 — Domark's recommended mini-

Perm any 11 players from a selection of Tony Bromages: only Booker and Rosenior seem to play with any consistency. Wark and Johnson, my big buys for the forward line, have scored precisely one goal each so far.

Clicking on a player's name calls up his fact file. Rosenior, my chosen captain, is a relative tower of strength in this side. He's unselfish, has a 20/20 influence rating, and at 28, has a few years of playing left in him.

Half time against Aston Villa, and the program shows comparative ratings for each player at present. These ratings are stored by the program at the end of each game and it will record the running average

The 'spirit levels' show how well your defence, midfield and attack are doing, while the line 'attacking', 'defending', explains what's happening at the moment. It's a bit of a sorry excuse for animated highlights.

After each game you're treated to the teleprinter gurgitating out a random selection of neutral results from the day. There's no way to cut this out and it becomes tedious after a while. Bring on the classified results ... and fast!

Manager

Careful targeting is in vain on this occasion; Manchester City won't let me approach their bright young goalkeeper at any price.

The system of short-listing players to buy is rather neatly done. having compiled my shortlist, I can now check to see if any of my scouts have recommended him as well.

mum spec. This is a football management game, after all, not Strike Commander. At 12MHz, it takes over a hour for the new game to configure itself. At 16MHz, it takes around half an hour, and on a 25MHz 486SX it still takes 20 minutes. This does not bode well for the game to come.

What I simply don't understand about this is that the section which takes the longest to configure is that which assigns the players' names in the game. Yet every time I set the game up, I still ended up with teams where two people had the same name (I never did discover whether it was Tony Bromage the goalkeeper, or Tony Bromage the centre forward who was called up to the Scottish international squad), or leagues

in which people called Segers were transferred from different clubs to different clubs every week. If it's going to take ages to sort out, why doesn't it do it properly? I'm not too sure about this idea of mixing well-known footballers' first names (lots of Garys, Pauls, and Vinnys) and surnames (paired with Salakos, Rushes, and Roseniors), simply because they seem to ring false. My team, apart from a proliferation of Tony Bromages, had the Segers twins (well, they were the same age), Craig and Owen, and the highly derivative Cyrille Flynn.

You can type in your own name as a manager, of course, but there's no facility to change players' names. You'll find a good sprinkling of the familiar and unfamiliar in the manager's names however:

Gabriella Benson makes it to Torquay, while Dominic Wheatley (MD of Domark) holds the reins at Hull).

Team building

Anyway, this is trivia compared to the nitty-gritty of coaching and nursing your team to the championship. You can choose which division to start in, so that you're either going for the title straightaway, or attempting to build a team which will climb the divisions. The game begins with three pre-season friendlies, which provide a useful introduction to the team selection and planning process, and the features of the game.

You can pick team tactics according to formation (4-4-2, 3-5-2, etc) playing style (Continental, long ball, and so on) and then position the players and give them their shirt numbers. As in the real league, playing skilful, creative football doesn't necessarily mean you'll win matches; it's more of a luxury you can afford once your club is rich and successful. Players are liable to be injured (though their recovery rates can be remarkable: two days out with a broken rib?), suspended, or just plain tired. They go off form, they want to leave the club, they catch mystery viruses ... all human life is here.

Since the squad you're assigned at the start is going to be depleted and there'll

This season's spending spree summarised.

Disk requirements

High density		✗
Hard disk only		✓
Space taken on hard disk		1.7Mb

Graphic modes

CGA	✗	EGA	✓	Tandy	✗
VGA	✓	SVGA	✗		

Soundboards

Ad Lib	✓	Roland	✓	Sound Blaster	✗

Control

Joystick	✗	Keyboard	✓	Mouse	✓

Performance

Optimum speed	33Mhz
Minimum memory	640K
Base RAM required	560K

be a fair proportion of donkeys on the books anyway, you'll want to buy players on the transfer market. The buying/selling players system in Championship Manager is, I reckon, one of the program's best features. Firstly you can draw up a shortlist of available players from a series of menus asking whether you're looking for a defender, goalkeeper, midfielder or attacker, then the playing qualities you're looking for, the divisions to hunt, the amount of money you'll pay and the age-range you have in mind.

The program next throws up a shortlist of players which meet the all-important criteria. You can then find out if any of your club scouts recommend them, see a factfile on each one and decide

whether to bid (most of them, incidentally, seem to agree happily if you bid slightly under the other club's asking price). You can, of course, also transfer list your own players, and sell them (if anyone wants them, that is!).

PCreview **4**

Not only do you have your own team to manage, but a considerable amount of gaming time is taken up with the UEFA Cup, Cup Winners' Cup, Rumbelow's Cup, FA Cup, Zenith Cup, and the Domark Trophy (a Leyland DAF substitute). Since it's impossible for your chosen side to be in all of these in one season, what starts out as an interesting sideline quickly becomes an irritant.

It's especially irritating because relaying the results of these matches hangs up the machine for a quite unaccountable amount of time. There is a quite superfluous imitation teleprinter which very, very slowly churns out a selection of results at the end of both the midweek and Saturday matches. This is followed by a performance of the week being awarded on-screen, which sits there for what seems like hours before the screen refreshes, then comes news of which manager has left which club. Time passes, then not altogether unpredictably, the next on-screen message tells you that his old club is now looking for a replacement. The idea is that you can then apply for the vacancy, but frankly, all I wanted to do was get on with the season.

All this, I might add, was on 486SX running at 25MHz, and just about acceptable, though certainly not smooth or speedy. Apart from the waiting involved, it breaks up the flow of a game which purports to require forward planning and strategic thinking. Played with a number of human, rather than computer opponents, it just takes ages to make any headway in the season at all.

Alternatively...

The Manager
Software 2000/US Gold £37.99
The principles are the same, but The Manager has more in the way of extra-curricular activities; you have to act as director as well. It also has the advantage of finely detailed, miniature action replay screens showing the highlights of your games. This might add nothing to the actual gameplay, but it's sorely missed in Championship Manager.
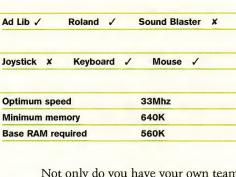
European Championship 1992
Elite, £29.99
This is a playing simulation, not a management game and thankfully it's not too wedded to this year's debacle — any eight European teams can take part, and you take the part of the players on the pitch of your chosen team, creating all those chances, hoofing all those long balls, dodging all those tackles ... the best soccer sim on the PC so far.

Multi-Player Soccer Manager
D&H Games £TBA
This doesn't give you any highlights either, and is still forthcoming despite being expected for some months now. it builds on D&H's success with Football Director (sic) on other formats, and offers similar features to The Manager and Championship Manager: multi-player options, various player ratings, and responsibilities over and above simple team selection.

■ *Christina Erskine*

Title	Crusaders of the Dark Savant
Publisher	Sir Tech/US Gold
Contact	(021) 625 3366
Price	£45.99

Crusaders *of the* Dark Savant

Accurate mapping depends on your character's abilities to develop cartographic skills.

B ane of the Cosmic Forge (Wizardry VI) was a light year ahead of the earlier programs and Crusaders of the Dark Savant is a leap forward again. There are four separate beginnings in Crusaders, allowing you to import characters from any of three possible endings from Cosmic Forge, or you can start with a completely new party.

The opening sequences recap the ending of Wizardry VI, where your party

With the release of the seventh game in the Wizardry series, it's back at level pegging with that other American RPG soap opera, the Ultima saga

came across an amazing piece of celestial hardware called the Bane of the Cosmic Forge. The discovery of this item meant that a hitherto hidden planet, Lost Guardia, is now revealed, and it is on this world that Crusaders is set. The relevance of Lost Guardia is that it was the home of an eccentric but brilliant scientist called M Phoonzang, and it is rumoured to house the mysterious Astral Dominae.

This Astral Dominae is pretty sought after, one of those founts of all wisdom and there are lots of people after it. This includes your party, plus those from nine others, including the mysterious Dark Savant and the poor old inhabitants of Lost Guardia itself.

If you start with a new party, the character generation routine is amongst the

best in any RPG, with 11 different races (the usual human, elf, dwarf, etc, plus rawulf, dracon and mook), 14 professions (fighter, mage, thief plus psionic, valkyrie and the super-characters of ninjas and samurai). Each of these combinations has differing skills levels, these divided into weaponry (sword, axe, bows, hands and feet, etc), physical (scouting, oratory and ninjutsu), and academia (theology, alchemy, artefacts, etc).

For those familiar with the Wizardry series, there are additions to the character creation/development with four new skills — swimming, climbing, diplomacy and (get ready with the prolonged applause) mapping. Yes, another first for a Wizardry product is the inclusion of auto-mapping, but in typical Sir Tech

Above: An assortment of creatures decide to act in an unfriendly manner.

Left: The world of Lost Guardia where the action of Wizardry VII takes place.

Your character's set forth ready to face all manner of creatures.

Men O' Groves attack your merry men.

fashion this is no give-away. The degree of auto-mapping depends on the possession of a map kit and also the extent of the character's mapping skill.

The interface has been completely overhauled since the days of Bane, now in full 256 colour graphics, with good mouse support and a genuine point and click interface. The main screen is tidy, with the main gaming world window, each of the six characters' graphic and stats, a direction rose and the basic 'default' actions.

So with your party now ready and willing, it's off into Lost Guardia. The graphics are superb, most of the action now taking place out of doors, with a scrolling skyline, day and night, and with intricate attention to detail. It's difficult to see the woods for the detail level of the trees — each gnarl and leaf being painstakingly drawn. Previous Wizardry releases have been criticised in being behind the times in the graphic department — no worry here, these graphics are of the first order.

Sound support is also the best in any previous Wizardry — from the atmospheric introduction, through to a full length sound track, complemented by excellent sound effects. The strange garbled 'speech' effects are retained, and are even more distinct, yet cannot be fully understood. This is a deliberate approach to add to the fantasy aspect, but it will be interesting to see what Sir Tech do next with the ever-improving audio facilities of the PC.

As you progress during the game, winning combat, solving quests, finding items, your characters develop and are periodically 'promoted'. In most FRPGs, this means that a character's strength increases automatically, or they have more general spell casting points, ie, the player has no influence ▶

DERF FIGHTER
TUCK MONK
FINGERS BARD
PRIOR BISHOP
RODIN ALCHEM
ITALY MAGE
DERF -VS-
2 HALLOWEECHES (2)
4 MAN O' GROVES (4)
FIGHT SPELL RUN
PARRY USE MOVE
BREATH EQUIP

Alternatively...

on how his party develops, and each player's party will develop along similar lines.

Wizardry takes a much more detailed and individual approach with basic character stats increasing or decreasing, gaining hit points and stamina *and* gaining skill bonuses and new spells. These gains are not automatic — they must be selected by the player, so do you want to improve swimming, or your skill with a sword or thievery? It's up to you.

The magic system, which in Bane was probably the best around, has been completely overhauled with now a total of 96 spells, divided into six different realms — fire, water, air, earth, mental and magic. There are four classes of magic user, the psionic, alchemist, priest and mage. All spells work in a similar way, use being dependent simply on 'knowing' the spell and possessing enough magic points, ie, there is no dependence on ingredients or mixing of reagents. The spells are acquired either through finding spell books, or by character advancement.

The combat system has also received considerable attention, with many new

Ultima Underworlds — The Stygian Abyss
Origin/Mindscape
£39.99
A full blown role-playing experience of the very highest order. Combat is in real time, instead of phased time, the movement system is without equal, but it does not have the same depth of plot or character development. All takes place underground in a vast dungeon complex. Underworld is a heavy hardware requirement and needs a fair level of dexterity.

Eye of the Beholder II
SSI/US Gold
£30.99
A very good follow-up to EOTB I, with improved graphics, a more varied gaming world and more puzzles. The best release to date from SSI, with an excellent interface and game system. Still with a very heavy emphasis on real time combat, and with a very linear storyline. Borrows heavily from the Dungeon Master approach, virtually no character development and a limited magic system.

Wizardry VI — Bane of the Cosmic Forge
Sir Tech/US Gold
£34.99
A superb FRPG, with a good plot, magic and combat system and character development. All improved in Crusaders, but Bane retains a charm all of its own. It's only recently been available in the UK but still one of the all time greats. With over 200 hours of game play, its final characters can be imported into Crusaders for further adventuring.
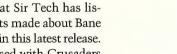
weapons and the introduction of a whole arsenal of 'futuristic mediæval' armaments — things like stun lances and laser staffs. Add to this the traditional weaponry of lots of different swords and axes, the magical paraphernalia of wands and enchanted items, and more modern hardware like sub-machine guns and you have the widest selection in any FRPG.

Crusaders has many, many more features, from a unique lock-opening system, to the 'diplomacy' feature that means you must try and bribe, impress, negotiate with the other races. At first your skills

will be low, and they will storm off in a huff, later if you are persuasive enough you will learn much and be able to make progress in your quests.

The movement interface relies on a central 'compass rose' for movement, rather than a screen overlay where you just point to the left of the screen to go left. This fits into the classic 'square' movement approach of Crusaders, rather than a real time free wheeling environment.

The language parser remains basic, and certain of the character conversations are not updated by events. There are some strange grammatical errors in the text, and most annoyingly with some of the puzzles you are forced to sit through a lengthy repetition of the text before you can offer an answer.

These criticisms are minor, and there is very little doubt that Sir Tech has listened to the comments made about Bane and attended to them in this latest release. If you are not impressed with Crusaders of the Dark Savant you can hang up your pointed hat and spell book forever.

■ *Robin Matthews*

Tech*spec* Crusaders will work on any 8086 processor, albeit rather slowly, but will also take advantage of a 486 and several megabytes of RAM. Sir Tech recommends at least a 10MHz machine, but unless you want it to run as slowly as Ultima VII, a 16MHz machine is the ideal platform. Both a mouse (essential for decent game play) and MS-DOS 5 are strongly recommended.

Disk requirements

High density		✓
Hard disk only		✓
Space taken on hard disk		7Mb

Graphic modes

CGA	✗	EGA	✓	Tandy	✗
VGA	✓	SVGA	✗		

Soundboards

Ad Lib	✓	Roland	✓	Sound Blaster	✓

Control

Joystick	✗	Keyboard	✓	Mouse	✓

Performance

Optimum speed	16MHz
Minimum memory	640K
Base RAM required	570K

PCreview preview **8**

Left and above: Wizardry VII's point and click interface makes moving around the Lost Guardia landscape a doddle.

Title	Laser Squad
Publisher	Krisalis
Contact	(0709) 372290
Price	£34.99

Part of the Wing Commander style intro sequence for mission one. A team of scientists have been kidnapped, your job is to go in and kill everything not on your side. Simple, huh?

Laser *Squad*

Each character has a limited amount of action points to use each turn. Everything costs APs, from moving to changing or firing a weapon.

PCreview **5**

Weapons a-plenty await the eager hands of your men. Unfortunately, you only have a limited amount of cash so choose wisely.

L aser Squad ...? Laser Squad ...? Oh yes, that's that old Spectrum thingy, isn't it? I used to quite like that. That's likely to be most people's reaction to Krisalis's updated version of the old classic. I know it was mine. Laser Squad, you see, was one of those classic old games that everyone used to love when it was on an 8-bit machine and that some enterprising young soul has graphically enhanced hoping to clean up by inspiring nostalgia in a more powerful audience. It happened most recently with Domark's Super Space Invaders, which unfortunately just wasn't a particularly wonderful game in the first place. Laser Squad, however, was a good game and not because of aesthetics. Its fundamental appeal was playability and if you can convert that, then bingo, you've got a winner.

Is it? Well, to all intents and purposes, yes. This version plays in almost exactly the same way as the original save one or two differences and that's where it goes wrong. Firstly, we have the intro sequences for each of the five missions. Numbers one and two have wonderful Wing Commander style sequences, hammering home the plot and really drawing you into the game. Missions three to five don't. I'm not sure why they don't, they just don't. A single screen with a couple of pages of text to read. You don't half feel let down.

Even more so at the end of a mission. Another single screen showing the amount of points scored and telling you which side won the battle. No victory sequence to reward the player's hard work (and believe me, working on a chain gang in the deep southern heart of Missouri has nothing on these tasks), nothing to make you feel like playing on.

I also can't help but feel that during the difficulty level setting stages of the game's development somebody turned it up to 'nightmare psycho' mode for a joke and forgot to turn it back down again. You start wit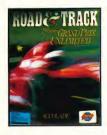h a pitifully small amount of cash to buy your equipment with, in some cases not even having enough to equip every member of your team fully with the lowest grade of armour and a single hand-to-hand weapon — and that's on the easiest setting. Heaven alone knows how anyone is supposed to get anywhere on the harder levels. I've no doubt that a fair number of people will probably revel in this kind of challenge but I just felt it was way too hard to be suitably playable rather than simply irritating.

As conversions go, Laser Squad is pretty good. Most of the original's virtues have been successfully translated and those of you wishing to wallow in a spot of nostalgia will probably have your whims more than adequately fulfilled. I'm not sure how a new audience will take it, especially when they have a host of other, better strategy games to choose from. Quite simply, if you want Laser Squad, you've got it. If you want a game that pushes the genre to its limits, then you'll have to look elsewhere I'm afraid.

■ *Paul Presley*

Tech *spec*

Extra memory isn't necessary for the game but if you want sampled sound effects for a Sound Blaster card, then you'll need the extra 128K.

Disk requirements					
	High density			✓	
	Hard disk only			✓	
	Space taken on hard disk			9.1Mb	
Graphic modes					
	CGA	✗	EGA	✓	Tandy	✗
	VGA	✓	SVGA	✗		
Soundboards					
	Ad Lib ✓		Roland	✓	Sound Blaster	✓
Control					
	Joystick	✓	Keyboard	✓	Mouse	✓
Performance					
	Optimum speed			20Mhz	
	Minimum memory			128K	
	Base RAM required			520K	

Title	**Grand Prix Unlimited**
Publisher	**Accolade**
Contact	**(081) 877 3303**
Price	**£39.99**

Betore you actually get to race, you need to plough through the options screens to pick the car track, and set-up most suited to you.

Road And Track
Presents Grand Prix Unlimited

The problem with most Grand Prix racing simulators is that once you have familiarised yourself with the courses, they become too easy to play and complete. However, with Grand Prix Unlimited, Accolade has tackled this problem with some style. As well as being an excellent driving game, GPU contains a secondary module, The Architect, which should keep even the most hardened computer racing enthusiast busy for some time.

The Architect allows players to modify any one of 16 authentic Grand Prix courses, or completely re-shape them from scratch. Bends can be added, straights lengthened, corners narrowed and finishing lines moved. Not only that, but signs, markers, placards, officials and camera crews can be placed anywhere around the track for added atmosphere.

Pit your driving skills against World Champion Nigel Mansell and his colleagues in the most realistic Formula One simulator yet

Nonetheless, GPU is first and foremost a racing simulator, and a very good one at that. The aim of the game is to complete a series of races against the best Formula One drivers, past or present, to be world champion. After the lacklustre opening screens, the main screen appears, split into sections: the World Championship, a single race and The Architect.
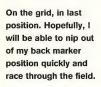
With the single race option, you need to pick your car: the choices include a Maclaren-Honda, a Ferrari, a Williams-Renault, a Bennetton-Ford and a Tyrell. The digitised pictures representing these racing cars looked a little blurred on my VGA screen, and, indeed, most of the digitised pictures looked the same throughout the game. They weren't bad enough to spoil the overall effect, but they did take a certain edge off the presentation.

Next, select the track, from Barcelona, a relatively easy course, to Hockenheim, a real nightmare. Finally, choose the number of laps, weather required and the number of cars you wish to race against. Once driving, you can switch on the lane con-

trol function which allows the computer to steer your car partially over the course. You are responsible for positioning the car left and right of the 'line' — an imaginary streak down which all the drivers drive — and controlling the speed, but the computer tries to keep it on the track.

It is still possible to crash, however, as you can go too fast, skid off the track and hit a tree or even plough into the crowd. The auto-shift gives the computer control of your gear changes, teaching you when and where to change up and down gear, a must if you are to win the world championship. The car adjustment enables you to modify and experiment with car settings, eg, view, brakes, radius-steering, wings, tyres and gears. Needless to say, you will do better if you understand some of the finer points of Formula One racing, such as the benefit of RPMs vs MPH, wing drag and steering sensitivity, but most of the options are self explanatory and easy to follow.

Now you are ready to race. Initially, you have to take part in one qualifying

On the grid, in last position. Hopefully, I will be able to nip out of my back marker position quickly and race through the field.

Having practised on various circuits, access the main menu and the World Championship option.

Choose the particular Grand Prix you wish to begin with from the menu — this time it's 1992.

Select your car, a Williams-Renault in this case, from the full Maclaren-Honda, Ferrari, etc, line-up.

With your course set and your car customised it's time for the first qualifying lap of the first Grand Prix.

I was wrong — no problems. I finished first in under three minutes. Mansell, Senna and co are well behind, as the little dots on the map at top right show.

Once you've practised enough, you can take part in the World Championship. Select any Grand Prix season between 1990-1992 and take part in 16 race meetings of your choice, and you'll get points for finishing in the first six.

If you own a sound card, you are in for a real treat. The sound of the squealing brakes, revving engines and background tunes heighten the dramatic effect. After trying the game without a sound card, I found the noise of the revving engines terribly annoying and the sound of the brakes reminded me of someone stamping on a Yorkshire terrier's tail.

GPU supplies a thrilling racing simulation to entertain experienced and novice gamers alike. The graphics are acceptable and scroll well, while the games detail is full, but not overwhelming, and, offering 48 courses and five levels of difficulty, it is certainly built to last.

■ *Wayne Legg*

PCreview **7**

Techspec

Grand Prix Unlimited comes on one high density 3.5" disk. Installation is very easy and surprisingly fast. The programmers recommend that the game be played on an AT class machine or better, and the minimum speed required is 16MHz. The program also supports the Thunder sound card.

Disk requirements

High density	✓
Hard disk only	✓
Space taken on hard disk	9Mb

Graphic modes

CGA	✗	EGA	✗	Tandy	✗
VGA	✓	SVGA	✓		

Soundboards

Ad Lib	✓	Roland	✓	Sound Blaster	✓

Control

Joystick	✓	Keyboard	✓	Mouse	✗

Performance

Optimum speed	16MHz
Minimum memory	640K
Free RAM required	570K

lap, a race against the clock, the result of which determines your position in the starting grid line-up.

Your car is controlled by either a joystick or the keyboard. Although the mouse is used to select certain items, it *cannot* be used for actual racing. Once you get your car going, you can appreciate the games graphics which may not be stunning, but are more than adequate and move in a fluid fashion. Indeed, the faster the car goes, the more fluid they become, and soon the scenery flashes past.

If you are good enough to qualify, you take part in the race proper. Once you are on the grid and start taking on the likes of Prost and Capelli — even at novice level — you are in for a tough time. The combination of keeping your car on the line, at the right speed, with the right revs while avoiding skidding and contact with other cars is an awesome task. As you are driving along, your spectacular manoeuvres and crashes are recorded, so that, with the instant replay facility (F3), you see where things went wrong or right.

Alternatively...

Super Car Pack
Accolade £34.99
Accolade combined two decent Grand Prix racing games — Ferrari Formula 1 and Grand Prix Circuit — with a slideshow called Exotic Car Showroom.

Both race games are a little dated now, although still worth serious consideration by ardent driving simulator fans because they still offer a challenge.

Indianapolis 500
Electronic Arts £24.99
Based on the 2.5 mile oval track in the USA, this game recreates the atmosphere of the most dangerous race in the world. With its impressive six-view replay options, the ability to customise your car plus 500 laps of pure mayhem, Indianapolis 500 rates as one of the most exciting racing simulations ever to be released.

Title	Double Dragon III: The Rosetta Stone
Publisher	Storm/Sales Curve
Contact	(071) 585 3308
Price	£29.99

End-of-level guardians are unimpressive and very easy to despatch requiring, in this case, just a couple of more hits than your usual baddie.

Double Dragon III:
The Rosetta Stone

Here on the second level your character must fight his attackers from the bike. This poses few problems due to the snails pace at which the game plays.

The PC has been a bit slow at catching up on arcade-style games, so it's good to see that Double Dragon III (never mind parts I and II for now) has been released for the machine. The plot revolves around an attempt by the Lee brothers to locate the Rosetta stone that will one day change the world (quite how it will achieve this modest goal is left unexplained). The game is played through about 10 horizontally scrolling levels where all the baddies present must be killed before you move on. These come in all shapes and sizes, ranging from sword-wielding samurai to vine-limbed treemen and although most attack using kicks and punches, some have their own special attack.

Each hero initially has about 250 'hit points' which are depleted when hit. Once reduced to zero the character is dead but may continue by using a 'coin'. One starts the game with 14 of these, and apart from resuscitation they may be used to purchase energy, a power-up, a weapon and a 'trick' (which is an extra combat move). Strangely, for a game of this genre, there aren't a great deal of moves available: kicks, flying kicks, punches, jumps and walking are all that you can do. This makes the fighting, the most critical area of the game, a rather tedious and unsatisfying affair. You are largely better off just 'fly kicking' your way throughout the whole level — I say 'whole', but the longest was probably four screens in length.

The end-of-level guardians are lacklustre characters and leave you with no sense of achievement once beaten. Animation of your badly drawn character is abysmal, and your opposition doesn't fare much better, moving like arthritic mannequins. Sound is of a similarly unimpressive level, consisting of wooden thuds, hollow thunks and other negligible spot effects.

Instinctive controls are an essential element of any fighting game, but I found the moves awkward to implement. This was mainly due to the fact that my joystick, along with most PC sticks, possesses two independent fire buttons as opposed to one, an option, not accounted for by the instructions, leaving me to figure the controls out for myself. As if all this wasn't enough the game is ridiculously short. Considering the cost I'd have

hoped for about 30 hours of play, but less than 60 minutes had elapsed by the time the end sequence was on the screen.

There may be a serious shortage of titles of this genre on the PC, but Double Dragon III isn't the answer to anyone's prayers.

■ *Khalid Howladar*

To open your escape route you must spell the correct word on the floor tiles (shades of Indiana Jones, perhaps).

Tech*spec* A joystick is required, and preferably that feels as much like a digital joystick to use as possible. Surprisingly, MCGA is supported. The game needs just the basic requirements to run and can be played from floppy disk; however, your machine must be at least a 286 for it to run.

Disk requirements

High density		✓ (5.25")
Hard disk only		✗
Space taken on hard disk		1.2Mb

Graphic modes

CGA	✗	EGA	✓	Tandy	✗	
VGA	✓	SVGA	✗			

Soundboards

Ad Lib	✓	Roland	✓	Sound Blaster	✓

Control

Joystick	✓	Keyboard	✓	Mouse	✗

Performance

Optimum speed	16Mhz
Minimum memory	640K
Free RAM required	<520K

review
2

Title	**The Presidents: It All Started With George**
Publisher	**IBM/National Geographic Society/Mindscape**
Contact	**(0444) 246333**
Price	**£117.44**

The Presidents

It All Started With George

The creators of Mammals – the recordbreaking bestselling CD-ROM to date – are back, this time slightly further up the evolutionary scale with America's most powerful men in history

Obviously designed as much for the lucrative US schools market as for individual users, The Presidents is intended as a complete guide to the 41 presidents of the USA. Its main selling point is simply the huge amount of information it contains. As the disc's jacket proudly proclaims, it has more than 1,000 full-screen photographs with captions, 33 video clips, and hundreds of sound bites.

Alongside the presidents themselves, you can also access a historical atlas of the USA. As the timeclock ticks down, the new states in the union flash and change colour.

If you've used Mammals – and its sales would suggest that almost everyone with a CD-ROM drive has – then The Presidents will look very familiar. For its main menu, the disc is divided into five major sections. When you first start the disc, the Getting Started section gives you a very clear and useful audio guide to how the disc works.

The great bulk of the data is held in the presidents' database, in which each of the 41 American presidents has his own standardised entry, from which a range of information about him is available.

Choose this option from the main menu for a directory of all the 41 presidents in either chronological or alphabetical order. When you select a name, you go directly to a section on the president in question, which contains a famous quote, details of the party he represented, his vice president, and a short description of the key features of his term in office. On each of these screens, there is also a series of buttons to access pictures, audio recordings, essays, and voting information.

For old Richard Milhous Nixon, for example, there are 16 pictures under the

Growth of the United States
Year 1789
States 12

camera icon which range from one of the first president to resign in regal pose, pictures of his wife, family, parents, him as a boy, as a young man, and photos from key moments in his crawl up the political ladder. The movie clip is from his historic visit to China (I was rather hoping for a clip from 'All The President's Men'). It's only with the sound bite that we come across his shameful abuse of office, as we hear him read his resignation on August 8, 1974.

The most ambitious section of the disc is a time-line that stretches from 1789 to 1991 which attempts to list and describe the key events, in both the US and the world, during each successive presidency. The time-line is a rather eclectic mix of material.

In Truman's second term, for example, it lists the publication of Catcher In The Rye, complete with a photograph of J D Salinger, the introduction of the Peanuts cartoon and the formation of NATO, among other diverse happenings. For each of the many hundreds of listings in the time-line, there is some form of associated data, which usually includes a picture and a text caption, although some items have only text.

For those confused about the presidency and the complexities of the process through which the American public chooses its main man, there is a section called The Presidency that has three photo essays on how the election process works, the president's powers, and something called President's Partners, which attempts to describe the day-to-day workings of the White House and just what all the hired hands actually do.

There is also a surprisingly shallow section on the political parties, which gives a very brief description of the origins of each of the parties and then lists the presidents they have successfully promoted

Tech *spec*

The Presidents uses no hard disk installation program: a Sound Blaster is required to hear the extracts from speeches.

Disk requirements

High density	✓
Hard disk only	✓
Space taken on hard disk	4.8Mb
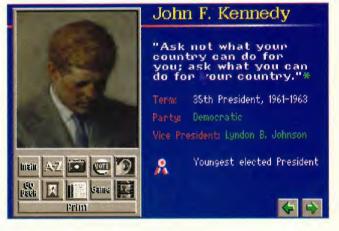
Graphic modes

CGA	✗	EGA	✗	Tandy	✗
VGA	✓	SVGA	✓		

Soundboards

Ad Lib	✓	Roland	✗	Sound Blaster	✓

Control

Joystick	✗	Keyboard	✗	Mouse	✓

Performance

Optimum speed	16MHz
Minimum memory	640K
Free RAM required	575K

to office. Although this section has very little detail, it did answer one question that has always perplexed me: just what the official title of the Republican party – the GOP – stands for. For those equally confused, it does in fact stand for the Grand Old Party, which goes a long way to explaining how it's capable of electing Ronald Reagan as a candidate.

While it is true that The Presidents is stuffed full of useful information, I found using it a disturbing experience. The most obvious criticism that you can level at it is its antiquated production values.

The interface, while perfectly usable, is extremely dated and becomes difficult to look at for more than half an hour at a time. While most of this is a matter of taste, the text is truly horrible. In a day and age when scalable font technologies are the norm, it's simply not on for anyone to

ship a product that uses pixelated type, especially a CD-ROM that relies so heavily on textual captions.

The pictures are also pretty terrible for products designed in 1992. The instructions say that VGA is required but in fact the picture are stored in the truly dreadful MCGA format. However, the picture quality is a bit more forgivable because using anything better, such as 256 Super VGA, would have significantly limited the audience.

Between the interface, the type and the picture quality, it's really obvious that the design team have made almost no attempt to improve on Mammals, which is a pity because they have moved a long

way from the cutting edge of CD-ROM represented by such excellent products as Time Warner's War in The Persian Gulf disc, which has a similar reliance on text and images.

Even more worrying is the editorial standpoint of The Presidents. It's not that the disc has any explicit politics. Indeed, there appears to have been a very genuine attempt to be comprehensive and even-handed, in which events are included, especially in the time-line, and what is said about them.

But that's just the point. Along the way, the disc's editorial team missed the opportunity to use the multimedia format to do one of the things that it's best at: presenting a multiplicity of views.

Instead, what they have served up is unforgivably sterile, static, homogenised and uncontroversial explanations of what are, by their nature, controversial incidents and issues that American society has lived through. In the end, the even-handedness comes over as simplistic and patronising.

Perhaps next time IBM and National Geographic should stick to furry animals. It's territory on which they seem much happier. ■ *Tim Carrigan*

Title	Hong Kong Mahjong Pro
Publisher	Electronic Arts
Contact	(0753) 549442
Price	£29.99

Siege has a built-in tutorial to get you used to the menus and tactics needed to play, and takes you through a few initial manoeuvres.

First you're treated to the long-range view. From here you can see plenty of the territory that is at your disposal,, as well as any enemy. It may not look like much but everything is the size of a pinprick.

Siege

Do Mindcraft's fantasy fortresses match the might of Interplay's ageing Castles? In Siege you have the choice of defending your castle or storming the walls from outside

Siege's editor gives you the choice of customising any scenario in the game, or creating your own.

If you were the flippant type, you might suggest that Gurtex, the land in which Siege is set, is a name more suited to all-weather outergarments or restraining undergarments. If you're not flippant, you'll accept Gurtex as the place where the forces of darkness have lain siege (and in some places, captured) the mighty castles of the Children of Light.

Let's opt for the latter. Siege takes you into a fantasy world where possession of fortresses is the only thing worth fighting for. There are four such fortresses, each with six different missions: Highrock, Fort Neir, Castle Elissa and Usk'hem Gart. Each has its own history, neatly detailed in the generally impressive manual, and each offers a differing challenge. As you would expect, however, the further you get down the list of scenarios, the tougher life becomes.

The first thing you have to decide is whether you're going to attack or defend the castle. The former is often the more

enjoyable option because the gadgets are better, but the latter offers the greater challenge and gets very tough indeed as the number of opponents increases. In both cases though, your success depends on just how skilled you are at strategy. This

point can't be made too often: however pretty you might think the screen shots look (and the graphics are, on the whole, very good), Siege is definitely *not* an arcade game. It plays more like a game of chess, because if you rush around throwing

It's advisable to play with the game's three zoom modes. The largest shows you the whole map; the intermediate view shows buildings and troops in detail, while the smallest ...

... shows you everything. This is your HQ, in the southeast corner of the battlefield, from where you can launch your unstoppable assaults on the castle at the centre of the terrain.

Deploying troops is simple. A keypress takes you to the Barracks screen, where you can take your pick from over a dozen types and equip them with weapons, armour and siege equipment.

For now, you'll have to be content with building a bridge over the moat. Engineers will build the bridge, but you'll need combat troops to defend it and archers to fight off foes.

It looks like the orcs are wise to your manoeuvres — they're flooding out of the castle gates. You could send a band of troops to shake them up a bit, and use the pull-down menus to issue orders.

troops at every problem instead of picking away at your enemy piece by piece, you soon discover what defeat feels like, even on the easiest of the nine levels.

A couple of in-game features help. Firstly, there's a tutorial which, despite its limited scope, introduces you to the game system and some of its more basic troop types. Secondly, there's an Editor which allows you to toy with all of the game's major parameters, so that you can either make life easier for yourself or confound and amuse your friends with devilish designs. The only trouble with the Editor is its woefully short 'Guidelines' section — half a dozen brief paragraphs which don't give many secrets away.

The scenarios themselves are neatly varied, partly because the castles and their surrounding terrain are beautifully designed to present differing problems, but mainly because the mix of people and weapons in each is very well balanced. This mix is enriched by the fact that you can play both 'good' and 'evil'

forces, depending on the mission type and your choice of attack or defence.

The list of combatants is pretty exhaustive, though they are not all available for every single scenario. On the 'good' side you can take control of dwarves, elves and humans, whereas in the 'evil' camp

Four screens of still graphics set the scene for the battles to come: a tale of discord brought about by orcs and goblins.

you have goblins, orcs, and trolls. As if this doesn't sound impressive enough, each race boasts individuals with varied skills: for example, the humans have warriors, berserkers, archers, spear-hurlers, engineers, sergeants and heroes.

And that's not all: the forces of darkness are reinforced with domugs (skilled archers), tekhirs (fox-faced archers, better than domugs), gnomes (engineers), and minotaurs (with a selection of skills). This still isn't the whole story either, because there are wizards and magical troops to add to the list, creatures who can be aligned to darkness or light. They include blue and purple wizards, zorlims and jerrahs, behemoth warriors, dreadknights, elementals, giant spiders and skeleton warriors.

Siege's enthusiastic attention to detail is witnessed by the fact that many of these creatures can be equipped with a range of weapons and body armour. Weapons include swords, axes, maces, spears, bows and teeth; the list of armour incorporates animal hides, hardened or studded leather, chain, banded, splinted or plate mail, and three types of shield. ▶

Even without the Editor, it will be a long time before you complete Siege: there are 24 scenarios to choose from, each more difficult than the last.

As you can see, simply sorting out which troops to deploy, where to send them, and what to give them as weapons, is a major task in itself.

Equipped for battle

The decisions don't get easier, though. Once you've decided on your troops and what they'll wear, you can allocate siege equipment. If you're attacking a castle you might need assault ladders to scale the walls, siege towers to give instant access to a fortress, mobile bridges to span the moats and rivers, and battering rams to break down the gates. If you're defending, boiling oil is one of the most satisfying weapons to use — not least for its gruesome, slurping, sound effect. Whether you're attacking or defending, ballistae (spear-throwers) and catapults come in useful.

All of these impressive details don't necessarily make a great game, though: for every plus point in Siege, there's usually a minus. The music is appropriately dramatic, but the sound effects are, on the whole, weak or just plain weird; though, it needs to be said, if you have extra memory you'll get digitised effects. The graphics are cute, very colourful and help to create a riotous feel in conflict situations, but they are poorly animated and lack character as a result.

The control system is comprehensive, with bags of options allowing you to examine the individual statistics of groups, give out dozens of different movements, attack and defence orders, zoom in and out of the map, examine troops as status bars, organise your forces in precise detail in the barracks, examine your victories and defeats as night falls.

In fact, there are far more features in the game than this review has the space to list, but not all of them are as friendly as they should be. For example, during play the mouse control was fine just as long as it was close to the action, but it

The first skirmish is lost. Too late, you examine your enemies' health with the histogram feature (the status bars). And you didn't even use your catapult, or boiling oil, or battering ram, or siege towers, or ladders, or … anything.

Techspec

Siege is a little more demanding than most when it comes to hardware — if you don't meet the following requirements, forget it: 590K free RAM, a hard disk, a Microsoft compatible mouse, VGA and a 12MHz 286 or better. The program also supports faster processors, and if you have extended memory above 1Mb you'll get fully digitized Sound Blaster effects. Our copy came on two low-density 3.5" disks.

Disk requirements

High density			✓	
Hard disk only			✗	
Space taken on hard disk			1.4Mb	

Graphic modes

CGA	✗	EGA	✗	Tandy	✗
VGA	✓	SVGA	✗		

Soundboards

Ad Lib	✓	Roland	✓	Sound Blaster	✓

Control

Joystick	✗	Keyboard	✓	Mouse	✓

Performance

Optimum speed	16MHz
Minimum memory	640K
Base RAM required	590K

Castles
Interplay/Electronic Arts, £34.99
An unusual variant on the Populous/world simulator genre, Castles is set in mediæval Wales. You play a king or queen whose job it is to construct a group of fortresses strong enough to withstand a group of invaders. There are four difficulty levels, but the aim throughout is basically the same: find a site, hire labour, build the castle and defend it.

Realms
Graftgold/Virgin, £35.99
Graftgold's first stab at world domination is a larger-scale game than Siege, but the principles remain the same. There are 10 realms to conquer, the objective in each to create adequate troops to defend your own cities and destroy your enemies'. You have to create a whole infrastructure of supply lines, devise complex strategies, and supply food. The battles themselves are the most fun, though.

was a little clumsy moving around the larger map. A combination of keys and mouse control works best.

To win in Siege, you need to ensure your flag is flying unchallenged above the battlements. Getting there isn't easy: it involves extensive use of the pause feature to coordinate large numbers of different troop types and give them specific orders, before unpausing and watching them work. Your job then involves reacting to the situation as you see fit.

As a result, Siege is an extremely complex game which will keep its followers busy for months. If your hardware is at the low end of the power scale, the computer's calculations can be a little slow, and the action is more like a boardgame than an arcade game. If however, above all else, the quality of the strategy dominates your decision to buy, you'll be happy with this.

Much of the action in-game is controlled with keys and handy pull-down menus.

■ *Gordon Houghton*

PCreview **7**

Title	**The Legend of Kyrandia**
Publisher	**Virgin Games**
Contact	**(081) 960 2255**
Price	**£39.99**

Kyrandia is pretty to the point of being twee, but it does manage to pack in some hefty puzzles as well. The following sequence from the first part of the game is fairly easy to solve, but it does give you a good idea of how the gameplay works.

After Brandon finds his grandfather turned to stone he sets out to look for clues to his cruel treatment. A friendly tree branch helps him to descend from his grandfather's house to the ground.

The Legend

Could this be the first interactive adventure aimed at eco-freaks? Find out by venturing into the green and pleasant kingdom of Kyrandia with our hero, Brandon, as he takes on an evil court jester, hell-bent on absolute power

Let's get one thing out of the way right now. The Legend of Kyrandia is a very pretty game. From the opening screen, through the animated opening sequence, to the game screens themselves, much work has gone into making Kyrandia look appealing, and this attention to detail helps create a unique atmosphere — an essential requirement for any adventure or role-playing game.

But bitter gaming experience shows that fancy graphics can hide a multitude of sins, and while in this case those sins aren't all that serious, the luscious scenery does serve to dis-

guise the fact that Kyrandia is really quite an old-fashioned adventure game with lots of state-of-the-art frills.

Some of the puzzles you have to solve wouldn't be out of place in one of those creaky old text adventures we all used to think were so brilliant many moons ago. Some puzzles are more entertaining than others, and some simply get in the way of your enjoyment of the game.

First, a quick look at the plot. It's your basic conflict between good and evil, set on the verdant isle of Kyrandia where the villain of the piece has stolen the mystical Kyragem which, in the mists of Kyrandia's past, was used to defend the kingdom from invading forces. The player takes the part of Brandon, heir to the throne of Kyrandia. At the opening of the game, he is unaware of his royal heritage as he has been raised in the woods by his grandfather, Kallak, chief of the mystics. But he is soon embroiled in the bid to put the aforementioned villain behind bars when he finds grandad turned to stone in their woodland hide-out.

By the way, the dastardly villain's name is Malcolm. Maybe the fact that this is an American production has something to do with it. Maybe American villains invariably answer to this name. Or maybe the trauma of bearing a name like this turns one to a life of crime. Who knows? I can't quite picture the game development conference where the programmers came up with 'Malcolm' as the name of the nastiest piece of work you've seen this side of Vlad the Impaler. Despite his name, the evil jester is a genuinely original character. I'm already willing to predict that you'll find our Malcolm turning up in the odd sequel or two.

Two Minutes *of woodland wandering*

Brandon wanders through the wood, until he comes to the Pool of Sorrow. Here, the program drops a large hint as to what Brandon should be doing next — catching a tear drop as it falls into the water.

Sensitive lad that he is, Brandon finds the sight of the rotten willow tree quite distressing and keens and wails at it's terrible plight. Brandon is beginning to make Fotherington Tomas look like Harrison Ford.

However, our observant nature-lover spots a dent in the tree that looks remarkably tear-shaped — much the same size and shape as the tear he caught from the Pool of Sorrow, in fact. A curious coincidence.

Amazing! Brandon's tear has healed the rotten willow and the tree is already putting out new green shoots and standing proudly in the woodland once more. Stirring music is played through the sound card at this point.

This particular segment of the adventure over, a new playmate for Brandon appears on the scene and it's off for the next thrilling instalment, a game of hide and seek in the forest. Whew! Control yourself now.

of Kyrandia

Meanwhile, back at the game ... as well as pretty graphics, it offers a very user friendly player interface which you can get to grips with literally seconds after installing the game. It's a simple 'point and click' job which can be manipulated easily via mouse or keyboard.

Character responses can be anything from an on-screen quip from Brandon or words of wisdom from other characters on screen on the time — which appear comic book style, superimposed over the scenery. Far better than the usual 'message box' which many game designers dump at the bottom of

One of Malcolm's many treacherous acts as he turns Brandon's grandad into a permanent musical statue.

Brandon's grandfather appeals for help against the evil that is taking over the land. Note Malcolm the jester is cheekily peeping in through the window.

the screen so you have to take your eye off the graphic action — which I always find is a bit like watching a film with subtitles. There *is* a message box, but this is for descriptions of items you pick up, or the location you find yourself in.

You also use the cursor to pick up items and place them in your inventory at the bottom of the screen. Or you can use it to 'show' Brandon what you've picked up. Normally he'll make some dumb comment, but sometimes his reply gives you a clue as to the useful nature of the item you've found.

The point and click cursor also allows Brandon to 'use' items such as magic scrolls, rocks, weapons and such like. You just move the item over the Brandon graphic and click on it, then sit back and watch what transpires. And these animated sequences are very well done.

In addition to thwarting the dastardly Malcolm, you also need to collect a series of jewels found on-screen at certain points throughout the game. The first jewel comes fairly easily in the opening section of the game which really acts as a learning session. This can be used by Brandon to 'heal' himself when he gets badly hurt. You'll need this sooner than you think ... ▶

Are you Brandon, grandson of Kallak?

The talking tree in grandfather's house has some cryptic clues for Brandon.

To be frank, I found that Brandon — who is a bit of a nerd at the start of the game — got quite irritating after a while, limited as he is to about three different responses when he's not involved in actions which are actually important to the adventure. I also found that some of the set pieces — when the player has no control over the action and is simply reduced to watching the story unfold — went on slightly too long, especially when you've watched them more than once while you're getting to grips with the game.

It's only when you move into the second section of the game — which you can only enter after inputting a password based on the game manual — that things start getting genuinely dangerous. And it ends with that fascinating confrontation with the evil court jester, juggling knives. The puzzles get tougher as you progress, too, and some sort of clue section in the manual would be helpful. Thankfully, Brandon starts to grow up as he learns more about the fate which could befall Kyrandia, and stops behaving like a squeaky-clean high school kid.

Onwards, and things get darker still, quite literally, as you plunge into an underground labyrinth. Now, the maze is such an old fashioned element of text adventures, it was a bit of a surprise to find it included in what, up until then, was more of an entertaining interactive movie. Brandon's death sequence here as his fireberries outlive their useful life gets a tad boring after a while, I can tell you!

The answer — and I'm letting you in on this because it will help your enjoyment of the game — is to collect the fireberries and take them with you, dropping them in each dark cavern as you go. The berries continue to glow when dropped: if you carry them more than three locations they burst, leaving you, literally, in the dark. Using this method you can, eventually, illuminate the labyrinth, although there are areas you can't reach even by doing this. It's also essential to get out your paper and pencils and make a map.

Throughout the game Kyrandia follows a trendy green theme. A talking tree in his woodland hide-out explains Brandon's quest to him at the outset of the game and, later, our hero has to restore a weeping willow to health with a tear taken from the Pool of Sorrow. Malcolm is an eco-vandal of the first degree. He bumps off a defenceless squirrel and blows up a tree with a single powerful spell in the game's jokey intro sequence. It's obvious that Brandon, having lived in the woods all his life, won't

The Pool of Sorrow, where Brandon can catch a falling tear to heal a weeping tree.

Tech*spec* You'll need a 286 or higher to play Legend of Kyrandia, and a fair bit of free disk space. A CD-ROM version of the game will be released in the next few weeks as well, and this will have digitised speech, with actors taking the part of all the characters, adding yet another dimension to this already fascinating game.

Disk requirements

High density		✓
Hard disk only		✓
Space taken on hard disk		7Mb

Graphic modes

CGA	✓	EGA	✓	Tandy	✗
VGA	✓	SVGA	✗		

Soundboards

Ad Lib	✓	Roland	✓	Sound Blaster	✓

Control

Joystick	✗	Keyboard	✓	Mouse	✓

Performance

Optimum speed	16MHz
Minimum memory	640K
Free RAM required	570K

take kindly to this sort of thing and, armed only with his Pal of the Planet membership card, sets out to do battle.

The frustration of the underground labyrinth apart, Kyrandia is an attractive, exciting addition to the growing catalogue of adventures for the PC. The graphics are superb, the animation and scrolling smooth, even on slower 286 machines, although if you're playing on an older 286 with VGA you may experience some oddities — bits of the screen becoming corrupted and so on. This can be cured without too much loss of quality by simply reconfiguring the game set-up.

On the negative side, I'm not sure that you'd play Kyrandia more than once. Once a puzzle has been solved, that's it, you'll know the solution for ever more. And once I've made it to the conclusion, I can't see myself going through the motions all over again — unless it's to show off some of the graphics.

■ *Tim Metcalfe*

Alternatively...

King's Quest V
Sierra, £39.99

Another adventure that delivers cute appeal by the bucketload is the latest chapter in Sierra's adventure serial. Although Kyrandia is more in keeping with the Lucasfilm titles, when it comes to telling stories that have you cringing with embarrassment after talking to magic owls and the like, Sierra can't be equalled.

Eye of The Beholder
US Gold/SSI, £25.99

An odd alternative choice this one, except when you consider that the Kyrandia programmers (Westwood Associates) were previously responsible for this first-person adventuring classic. It's interesting to note that despite the obvious differences in style, there are a lot of similarities between the two games.

Title	Carriers at War — Fleet Operations in the Pacific 1941- 1945
Publisher	SSG/Electronic Arts
Contact	(0753) 549442
Price	£34.99

Although Carriers at War is primarily a strategy game with plenty of opportunity for detailed planning, you also get the chance to see battles in glorious close-up.

Carriers

Carriers at War is now available on PC, and looks as though for once, it may have been worth the wait. It's the latest war game from the Australian outfit Strategic Studies Group, and is its first release since the very successful Warlords.

Carriers is a strategic simulation of World War II air/naval operations in the Pacific, and covers the major carrier battles of the Coral Sea, Midway, the Eastern Solomons, Santa Cruz and the Phillipine Seas. An additional tutorial scenario is included, based on the raid on Pearl Harbour — the single event that brought the US into World War II and described by President Roosevelt as "a date that will live in infamy".

The flagship of the imperial Japanese Navy Task Force, the fleet carrier Akagi.

SSG's long-awaited Carrier game enters the fray. SSG admit that Carriers' launch has been delayed, but state it was because they insisted on getting it right

Although you control all the naval operations as commander of either the United States or imperial Japanese forces, the core of the game is the control of a ship that a few years later came to rule the seas and oceans of the world. The aircraft carrier, or rather the weapons for which the carrier provides a home, a base and an armoury, is capable of destroying any other vessel. Its primary role in practice became the search and destruction of enemy carriers, thereby allowing it to command the skies, and the seas.

In each of the five scenarios, your fleet must search, find and destroy the other carriers before they find you. This is achieved by searching with seaplanes, carrier-based planes, land-based planes and ships.

This 'search' aspect and the resultant sightings are the single most important aspect of Carriers at War, and is approached in a very detailed way — during the scenario you will receive a flood of reports and sightings which may be inaccurate, but are in any event only valid for about

seven hours during the day (and about four hours at night). The first reported sighting is not as reliable as one which has two or three reports, the computer keeping tally of sightings and collating the reports.

Educated guesses
These sighting reports also 'age' — the older the report, the longer the enemy unit has had to move, the report also contains details of the weather, who made the sighting and an estimate of speed and heading. This gives an unparalled depth to the search feature, and requires some deduction and educated guesswork from the commander.
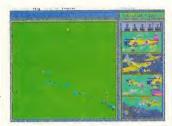
Each fleet is made up of individual ships, combined into task groups and then into task forces. These are controlled on a variety of levels, even down to a single destroyer and single planes. Actions are specified for each unit, where to search, whether to change course or speed, set up a search routine or launch combat air patrols (CAPs) or air strikes.

Two Minutes of naval warfare

The attack starts as Zero fighters and Val and Betty bombers pound the naval facilities in Hawaii.

The heavy cruiser, USS San Francisco, receiving several direct hits from the accurate Japanese bombers.

The mighty USS Oklahoma pounded unmercilessly as she lies ihelpless n Battleship Row.

The inevitable Japanese victory displayed in all its chilling glory, but it could have been far worse.

at War

CAPs are crucial if you are to survive. These are fighter planes that circle the fleet, waiting to intercept any hostile aircraft. If you don't have these aloft, there is the possibility of being caught with the carrier's flight decks full of planes being re-armed and re-fuelled. This procedure, as well as recovering returning aircraft is the carrier's weakest moment, as the Japanese navy found to its cost during the cataclysmic Battle of Midway.

The whole product is a graphic delight, with well-crafted VGA screens and a smooth drop down menu system. For such a detailed product the interface is

delightfully 'uncluttered' with non-available options being 'greyed out'. A mouse is needed, but as a result of this (and good design) the system is easy to use and, once you've found your way around, logical and friendly too.

The graphic animation is good, for example in combat the presentation of the ships in side profile and of 'hits' smashing into the decks and superstructure, with damage visibly taking effect. The surface action is fairly rudimentary, but achieves its limited aims, with another series of command options.

Undercover agents

'Orders' are selected for each unit with 'time' being frozen. This allows the armchair strategist plenty of time to consider the wealth of search reports, naval sightings and 'spotter' information, including undercover agents. During actual play, time can be dealt with in one of many ways, the game running 'until dusk', 'until dawn', in one hour jumps, in five minute jumps, or until combat occurs or other pre-set events happen. This again makes gameplay smooth, without over-automating the warmongering.

Once sightings are received, strikes will be launched, with a whole new string of decisions, dilemmas and balancing acts: which planes will you send, what will they be armed with, will they fly on an ad hoc basis (the quickest), or wait for an orchestrated attack (slower but can be more effective). Weather plays its part, with displays available showing either all or bad conditions. Also, subs are marauding the sea lanes and can wreak considerable havoc. The Shinano, the largest carrier of World War II, was sunk by a US submarine before she could launch an air strike in anger.

Carriers At War comes with a great graphic database of the main ships and

Kamizaze — The Divine Wind From May 27th 1944 until the end of the war, the Japanese lost 3,913 aircraft in Kamikaze attacks. They sunk 62 vessels and damaged 370.

planes of the period, and also with a very comprehensive reporting function on each side's losses, successes and current 'victory' points and status. As with all SSG releases, there is a range of detailed features that affect the strategy and tactics. These include seaplane tenders, fuel management and fleet re-fuelling, shore bombardment and kamikazes. The level of attention to detail is such that the kamikaze planes have an amended payload and performance, reflecting the additional explosives and the 'one-way' ticket effect on operational range. Reinforcements may be used when available, and repairs and replacements will be available as the air base resources allow — these can of course be reduced by enemy action, with the manual getting in a bit of a mess, referring to "permanent damage ... that can be repaired"!

Battle construction
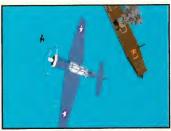
It has been one of the standard features of SSG, and one of its strong points, that it has included in their Battlefront games both Warplan and Warpaint. These allow the war gamer to construct original battles, and to create almost endless variations to historical scenarios. In Carriers at War there is no separate scenario editor "for reasons of price, quality and time". SSG states that a CAW editor will be available, probably about Christmas. This is a disappointment, but Carriers does contain a new module called WarRoom.

WarRoom is billed by SSG as the 'ultimate' artificial intelligence for war games. Rather than hard-wiring a series of rules, it attempts to give the selected scenario a series of specially crafted, infinitely flexible plans (still sounds the same as hard

Carrier Strike
SSI/US Gold, £39-99
This is one of the best SSI war games to date, and covers the exact same topic of carrier-based warfare. Although Carriers at War possibly has the wider appeal. The graphics are not as good as in Carriers at War, but some of the gaming detail is better, in particular management of the aircraft carrier elevators and the search procedures.

Aces of the Pacific
Dynamix/Sierra, £39-99
More of a flight sim than a strategy war game, but with incredible detail and lots of 'carrier' warfare. Aces puts you in the cockpit of a fighter plane/light bomber in the Pacific campaign of World War II. A development of the Red Baron games engine, with very responsive flying and a superb 'floating camera' facility. Possibly the best of the 'historic' flight sims.

Harpoon
360/Electronic Arts, £34.99
The real grand-daddy of the naval strategy games, but it still is one of the very best. Pioneered many features found in later games, including Carriers at War — drop down menus, point-and-click interface, superb visual database, etc. Scenario disks keep it going but it could do with a complete visual overhaul to keep it at the front of the pack.

PC review **7**

wiring!). Anyway, WarRoom with 'probability factors' claims to avoid predictable results and give the war gamer the best computer AI yet evolved. An example of this is in the Pearl Harbour tutorial, where instead of the US battlewagons queuing up on Battleship Row, the fleet is dispersed and there is a resultant 'cat and mouse' game rather than the likely annihilation of the US Pacific Fleet.

The documentation is excellent, with almost one half of the manual being dedicated to an illustrated history of the Pacific War. This consists of a series of articles and anecdotes from "Why Japan went to war", through the Pearl Harbour attack, various scenarios contained in Carriers at War to the death ride of the largest battleship in the world, the Yamato. The supporting articles are nicely varied, cov-

ering topics as diverse as Carrier design and development, flight deck cycles and the British experience. This section provides many useful tips and tactics that can be applied to the game scenarios, and also gives an understanding of the wider issues involved.

Carriers At War has been a long time coming, but the final product is an accomplished and very playable addition to the ever improving 'new generation' of war gaming software. A campaign option would have been a welcome feature, and some additional information showing the actual sinking of vessels and cumulative damage meters would have been handy. All in all, this game is no disappointment, but perhaps the promised scenario editor is needed to establish this as a classic.

■ *Robin Matthews*

Tech *spec*
Carriers at War comes on two high density 1.44Mb disks.

Disk requirements			
High density		✓	
Hard disk only		✓	
Space taken on hard disk		5Mb	

Graphic modes					
CGA	✗	EGA	✓	Tandy	✗
VGA	✓	SVGA	✗		

Soundboards					
Ad Lib	✓	Roland	✗	Sound Blaster	✓

Control					
Joystick	✗	Keyboard	✗	Mouse	✓

Performance		
Optimum speed		16Mhz
Minimum memory		640K
Base RAM required		570K

Reviews extra

The games that got away

Discovery: in the Steps of Columbus ...

... the expedition is planned.

A fifteenth century view of journey's end.

The flotilla sets sail.

"Surely that can't be everything?" we hear you cry. Well, you're right. It isn't. If we were to cover everything released in a single month, we'd be bigger than the Peking telephone directory. Here's a quick run-down of some of the other titles on offer soon.

It seems to be the lull before the storm of Christmas at the moment, especially where computer games are concerned. Not many games actually got away this month, but amongst those that did there was one particularly interesting product.

Ultima VII: Forge of Virtue (Origin, £19.99) is touted as being the world's first ever add-*in* disk, meaning that it can be installed and inserted into your existing Ultima VII game at any stage, not just after you've finished the main story as with most data disks. Journey to a new island beneath the sea (sounds a bit like Atlantis) in search of yet more danger and yet more power. Come and go at will as you play through the rest of Ultima VII.

It's quite a novel idea and doesn't work at all badly, save for the limitations that Ultima VII had to begin with. I can quite easily see more products like this happening soon for plenty of other games, increasing their entertainment value at a stroke. If you do already own Ultima VII (because it is necessary to run this disk) and you are enjoying it, then you will no doubt find
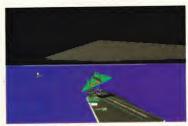
Mig-29M Superfulcrum ...

... now available in a double bill ...

... with MicroProse's F19 Stealth Fighter.

Two venerable flight sims in one package.

Forge of Virtue a very welcome addition.

Meanwhile, on a slightly different tack is the Harpoon Designer's Series (Three-Sixty, £19.99). Again you'll need the original game to play this pack (or should that be wolfpack?) containing 48 new battles for budding naval commanders.

Designed by veteran 'Harpooners' (as the manual calls them), these depict a vivid, modern-day look at possible global conflicts. Strictly for the enthusiast but highly recommended.

Also dealing with combat situations, but this time in a much more familiar guise is the Head To Head compilation pack (Domark, £39.99) containing MicroProse's F-19 Stealth Fighter and Domark's MiG-29M Superfulcrum. You'd be forgiven for thinking that Domark had found a way to link the two games together when looking at the pack. Head to head? Hmm, unfortunately it's just a fancy title for the compilation and both games are completely standalone products.

The pack itself isn't particularly good value when you consider that for much the same price you can buy the updated F-117A Nighthawk from MicroProse and do away with the rather awful MiG-29M simulation found herein. It isn't helped by the fact that F-19 Stealth Fighter just looks so dated now when you put it up against something like Falcon 3.0 that you almost feel embarrassed to play the thing. If only Domark *had* found a way to link the two together, then we may have had something worthwhile. Never mind.

Finally, in keeping with the current Columbus mood generated by the three films (don't forget there's a Carry On Columbus doing the rounds) is Discovery, In The Steps of Columbus (Impressions, £34.99). It's almost like a cut-down version of Civilization, although not nearly as good. While it's packed with historical fact and rather nice graphics, Discovery is little more than your average exploration/strategy game.

As with the current spate of Columbus movies, there's also another Columbus game waiting in the wings. Domark's game has been delayed somewhat and now seems likely to celebrate the 501st anniversary of the modern discovery of the Americas with a January release date.

PC Review's best buys

What are the best games currently available? PC Review's best buys are taken from the last three months of reviews in order to give you a good idea of what to shell out for.

Laura Bow II: The Dagger of Amon Ra
Sierra, £39.99
Murder, mystery and suspense in this sequel to The Colonel's Bequest. Once again, cub reporter Laura Bow is caught up in a web of 1920's deceit as she tries to prove whodunnit to whom, what the murder weapon was and where the nasty business took place.

Hong Kong Mahjong Pro
Electronic Arts, £29.99
As ancient Chinese games go, Mahjong is one of the most popular. Electronic Arts gives you the chance to play this intense game of skill in your own home, without the annoyance of losing all the tiles.

Indiana Jones and the Fate of Atlantis
Lucasfilm, £37.99
The latest and greatest Indy adventure from the masters of interactive storytelling. Join the world's most famous archaeologist as he battles Nazi soldiers and ancient religions in a search for the mythical underwater city.

Jimmy White's Whirlwind Snooker
Virgin, £30.99
Archer Maclean's successful snooker simulation comes to the PC and just gets better. Super smooth 3D and immense playability makes this a classic in every sense of the word. Look out for his pool game in a few months time.

Lure of the Temptress
Virgin, £35.99
A brand new adventure system that combines the finest of graphics with buckets of atmosphere. Free an oppressed village from the grip of a tyrannical sorceress in a totally believable scenario.

Heroes of the 357th
Electronic Arts, £34.99
Edge of the seat flying action over the war-torn fields of France. Fight against the mighty hoards of the Luftwaffe, while bombing important targets in your P-51 Mustang. Smooth, attractive and very playable.

The Golden Turkey 1992

With the best games of the last three months having been detailed elsewhere on this page, we thought we'd open the running for the worst game. Any game that has been reviewed in a PC Review with a 1992 cover date is applicable (so, unfortunately, The Terminator by Bethesda — the only game so far to score a one star rating — was just a little too early). The competition has been fierce with such notable stinkers as Home Alone, The Town With No Name and The Laffer Utilities all managing to notch up some dismal scores. But currently out in front are not one, not two, but three games, all of which managed to score a lowly two stars.

Paperboy 2 (Issue 5) was a grim attempt to convert the semi-popular arcade sequel to our unfortunate monitors. Poor animations, scurrilous sound and indifferent programming led to an absolute disaster.

Unreal (Issue 6) proved that not everything that comes from France is up to the quality of Delphine. Ubisoft's dire mixture of 3D flying action and horizontally scrolling beat 'em up left more than just a bitter taste in the mouth.

The Taking of Beverly Hills (Issue 7), believe it or not, was actually a film licence. Sadly, the film was so bad that it went straight through to video in the States and has yet to be inflicted upon a British audience. The game is not much better and would be better off going straight through to a budget title.

Remember folks, there's still one more issue to go for someone to score a mighty one star and clinch this year's crown, so keep your eyes peeled for next month's PC Review to see the final winner/loser.

Shareware Reviews

Sam Mackenzie looks at the best of what's new in shareware and public domain software. This month, a collection of CD-ROM animations, a program to help you compile astrological charts, and a arcade game featuring the mighty space chicken

Cosmo's Cosmic Adventures

This game from Apogee is another high quality graphic adventure in a similar vein to Captain Comic and Commander Keen. You take the part of Cosmo, a small space boy who with his parents crash lands on an uncharted planet. Cosmo wanders off to explore, and when he returns his parents have disappeared. The object of the game is to rescue his parents, avoiding monsters on the way. As with other similar games, you run, jump, drop bombs, and so on, eating food, collecting stars, and more bombs.

As Cosmo makes his way through the levels on the planet, he meets various monsters, including poisonous grass, ghosts, and red monsters with big teeth. He can beat them by jumping on them or by exploding bombs near them, and can eat special foods to restore his failing health. Most of the time he eats fruit, but there are also brightly coloured rings which will make him well again.

This type of game is great fun to play, and although this particular offering is not quite as polished as other Apogee games such as Wolfenstein 3-D and Commander Keen, it still compares very well to most other shareware.

Product:	**Cosmo's Cosmic Adventures**
Supplier:	**Precision Software Publishing**
Tel:	**(0233) 208288**
Product code:	**Cosmo**
Price:	**£3 on 3.5 inch disk, £2.50 on 5.25**
Registration Price:	**£29**
What you get for registering:	**next two episodes, hints and tricks booklet, manual, secret 'cheat' password, new bonus games**
Specification:	**XT**
Disk space:	**2M**
Graphic modes:	**EGA, VGA**
Soundboards:	**Ad Lib, Sound Blaster, disney sound source**
Control:	**mouse, joystick, gravis gamespad, keyboard**

Green

This is an ecological version of a very old game called Hammarabi, of which numerous variations exist. The essence of all these games is that you are in charge of one team of players — in this case the farmers and foresters who are trying to keep the countryside 'green', while the other team tries to do exactly the opposite. The opposition in this case is attempting to pave the whole area. At its simplest, they lay down pavement, you plant hedges. There is rather more to the game than this, of course. You can alter your team of players to carry out different tasks, such as growing trees, clearing rubble, and so on. The aim is to make all the pavers retire, so that you can concentrate on making the land green again.

This is a nice implementation of an old idea. It needs at least EGA graphics, and will support VGA if present. It also needs a Microsoft or compatible mouse. The graphics of the game are not up to the standard you would find in a game relying solely on appearance, but for a game of this type they are pretty good. There are various starting configurations for the game, and also ten levels of difficulty.

Product:	**Green**
Supplier:	**The Disk Park**
Tel:	**(0525) 841731**
Product code:	**673 Green**
Price:	**£2.50**
Registration price:	**$25**
What you get for registering:	**latest version, more maps, another game**
Specification	**XT**
:Disk space:	**350K**
Graphic modes:	**EGA, VGA**
Soundboards:	**internal speaker**
Control:	**keyboard, mouse**

Astro Astrology

This program allows you to prepare various charts using astrological techniques. You fill in the name, date, place and time of birth, then can prepare a range of reports. I have to admit to being a complete sceptic when it comes to astrology, but given the popularity of horoscopes in magazines and newspapers, I know that many people think otherwise.

The reports produced by Astro Astrology are much more detailed than those you get in the horoscopes, of course, and provide a character outline rather than attempting the unlikely task of predicting the future. The theory goes that by pinpointing the exact time and place that you were born, an accurate description of you can be prepared. If you accept this, you might be slightly upset to discover that there are only eight major English cities covered, with similar numbers for Scotland, Wales, and Northern Ireland. You can type in the location using longitude and latitude if you really think it matters.

The charts produced are certainly copious — typically around 650 lines for a natal chart, and over 700 lines for a compatibility chart between two partners. There are also options to draw charts of your data. Typical extracts from my report were as follows:

"Your moon is squared to Jupiter with an orb of five degrees. Your easy generosity is exploited by those who know that you are indiscriminately extravagant.

Your Mercury is in the first house, not on a house cusp and less important. Your daily activities usually require that you express yourself by talking and by writing. You especially enjoy those activities that give you a chance to compete with others in selling your ideas."

So how accurate were the reports produced? I prepared several, and in most cases the person whose chart it was picked out some things that they agreed with, though in a 700 line description it would be an unusual person who couldn't find something relevant. Everyone in the office wanted to see their personal chart, including those of us who wanted to see it mainly so that we could prove it wrong.

Because of this ability to attract attention, one use that I could definitely see for the package would be as a money spinner at the local village fair; I'm sure that you could sell a fair number of charts, and as each is produced in a matter of seconds, it might well make a tidy profit!

Danger Hot Stuff

Before you all get carried away with the idea of a CD-ROM entitled Danger Hot Stuff, let me put the record straight and say that it is a collection of animations, sound effects and pictures which would be quite at home on children's TV. The animations are mostly clips from promotional multimedia presentations or experiments.

The authors have all offered their 'hot stuff' for the disk as a sort of advertisement for their talents and as far as it goes it works.

If you are not in the market for an animation company to produce your promos, then what you will get out of it is a look at over 30 minutes of animation and sound, the sort of thing you'll probably only want to watch once, or perhaps twice at a stretch.

You need a Sound Blaster or Sound Blaster Pro to hear the music and sound effects, but, to be frank, they are not particularly impressive. Furthermore, you need VGA or SVGA to watch and there is no disputing that the images are the most important part of this disk.

The range of animations include walking/running mannequins, Newton's cradle, helicopters, exhibition display stands, a perpetual motion machine and so on.

The disk is almost worth its cost for just one item — the RoboTruck — but I will resist spoiling the joke by telling you too much about it!

So, how good is Danger Hot Stuff? Well, if you want to see some state of the art PC animations, using mainly Autodesk 3D Studio, then you only need type Go to see the contents of this disk — you might even be inspired enough to find out how they were produced and have a go yourself.

As an aside, you will also discover how good your PC is as a multimedia machine. I tried running Danger Hot Stuff on a range of machines and the speed of animation varied widely — from being too fast, to so slow that it wasn't really accurate to call it animation!

It wasn't just the speed of the machine that mattered. The type and quality of the CD-ROM drive had almost as much impact. In the case of one system I even managed to tune the CD-ROM's installation to speed up the animation to the point where it was acceptable.

Even so, you are unlikely to want to sit through Danger Hot Stuff too many times, but it's nice to show off to your friends, and it certainly has one obvious potential use as a continuous demo in a dealer's shop window. Look out for more disks in the same series.

Product:	Astro Astrology
Supplier:	Softcell
Tel:	(0443) 238630
Product Code:	4480 / ZM
Price:	5 for two disks
Registration price:	between $39.95 and $89.95 depending on version
What you get for registering:	technical support, more locations, more reports, printed manual
Specification:	XT
Disk space:	1.4Mb
Graphic modes:	EGA
Soundboards:	none
Control: keyboard,	mouse

Product:	Danger Hot Stuff
Supplier:	Unica
Tel:	(061) 429 0241
Product code:	CDHOTSTUFF
Price:	£7.50 on CD-ROM
Registration price:	n/a
What you get for registering:	n/a
Specification:	Multimedia PC (PC with CD Rom)
Disk space:	n/a
Graphic modes:	VGA, SVGA
Soundboards:	Sound Blaster
Control:	n/a

Astro Chickens

Anyone who remembers Lunar Lander will recognise Astro Chicken as a variation on this theme. You may be familiar with it anyway, if you are well up on games from Sierra On-Line, as it is, in fact, included in one of its adventure games in the Space Quest series as an 'incidental' arcade game. You control a space chicken, moving it to the left, right, or flapping its wings. The object of the game is to get the chicken to land gently on the landing pad. Landing too quickly or anywhere else on the surface of the planet causes a nasty accident! If you land successfully, the chicken flaps its wings and crows.

There are a couple of amusing touches — there is a 'boss' key, but it brings up a message saying "I see, you don't want your boss to know that you're playing Astro Chicken", pressing it again brings up "And you probably don't want him to know that you've been playing it for x hours, y minutes, and z seconds", where x, y, and z show how long you've been playing the game!

The sight of the chicken flapping away, lurching from side to side, and usually somersaulting all over the surface of the planet is amusingly animated, and I enjoyed this for what it is — a simple game, but fun to play.

Product:	**Astro Chicken**
Supplier:	**Softcell**
Tel:	**(0443) 238630**
Product code:	**4480 / ZM**
Price:	**£2.50**
Registration price:	**free**
What you get for registering:	**n/a**
Specification:	**XT**
Disk space:	**2.77M**
Graphic modes:	**CGA, EGA, VGA**
Soundboards:	**huge range including Ad Lib, but they don't add a lot**
Control:	**keyboard, mouse, joystick**

If you would like to take advantage of the Shareware Finder Service, fill in the form, right, or reproduce it in letter form, and send it to PC Review, Shareware Finder Service, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. You can also fax your request to (071) 972 6710, or e-mail it to pcreview@CIX.compulink.co.uk.

Please note that PC Review doesn't undertake to *supply* you with the software we come up with, but we will identify the product we believe will suit your purpose, and make our own, necessarily subjective, evaluation of it.

Shareware Finder Service

This is a letter from a desperate A-level maths student! I am having great difficulty with this subject, and I wonder if there is a maths tuition program available for the PC which can enable me to help myself."
Scott Mundy — Hong Kong

There is plenty of help available in the form of shareware programs but A-level maths covers a very wide subject area, so I am not sure whether it's algebra, geometry, trigonometry or calculus that is causing you problems. The following are just three of the many titles you could obtain from Advantage, so it will be worth requesting a catalogue if you decided to try any of them out. All of the programs have originated in the USA so they are not tailored to the A-level syllabus as such — but at least maths is much the same on both sides of the Atlantic!

Algebrax is an algebra tutor with five levels of difficulty and five questions at each level. After a correct answer, a more difficult problem is set and when a wrong answer is given the program takes you through the problem step by step which seems to me to be a promising feature. Are You Ready for Calculus? is a program designed to help students review the basics of algebra and trigonometry. It uses multiple choice quizzes and if you do not know the answers has help screens with relevant information. X-Y See takes a visual approach to algebra, geometry and trigonometry and uses high resolution graphics to let you see equations and the effects of changing equations. It includes puzzles where you have to select variables to duplicate the form, position and orientation of functions.

"I happened to be rereading your May issue, when I came across a clue to the author of a Shareware program for which I wish to pay registration fee in order to obtain the latest version. I have an Amstrad 2286 with a Brother 1224 printer, and if all programs actually worked with anything other than ordinary typing as it does with " Printer Partner " (reviewed on page 141 of your May issue) I would be very happy. I have been trying to trace the author for four weeks but to no avail. You, however, give the name Robert Bequette and the fee of $20. Can you supply the address if you can trace it?"
F G H Middleton — Cheshire

I have to admit to being a bit mystified by your question as it sounds from your letter as though you already have this shareware disk and it is usually very difficult to avoid encountering the registration details at every turn when you run a shareware program! The whole idea of shareware is that you can try out a program before parting with the registration fee so do get hold of the disk reviewed in the May issue if you do not have it already. Meanwhile Advantage Software has kindly looked up the details and the address to which you should send $20 is: Acropolis Software, P.O Box 5037, Fair Oaks, CA 95628 USA. Advantage advises that when registering a US program you initially write a letter to check that the company is still at the address given. It probably is worth asking how it can accept payment — for example, if it takes Visa or Mastercard as banks make a hefty charge for converting pounds to dollars.

Name ....
Address ....
....
....
Daytime tel no (in case we need more details)...
PC system specifications:
Processor.........................RAM ....Hard/floppy disk......................................
Graphics ....DOS.........................Windows.......................................
I am looking for software which will perform the following task ....
....
....
....

QED

Another month, another QED section. As you're probably already aware this month's main guide deals with the latest (and greatest) Indiana Jones adventure from Lucasfilm. We also continue our Simulation School series with a look at helicopters. Another Help Wanted special is also on the cards as well as all the usual hints, tips and cheats. Let us know if there is anything you want to see in QED by dropping us a line.

Indiana Jones and the Fate of Atlantis - Part One

PC Review's own man with the hat, Paul Presley, takes you through Lucasfilm's latest epic adventure

Because of the random nature of a lot of the game's puzzles, this is obviously not a step-by-step solution. Instead we'll deal with each of the game's main sections in turn, starting with New York.

One other to note is that although most of the conversations in the game are multiple choice tests, there's never really a wrong answer or one that will prevent you from completing the game. If you don't find the information you require first time round, just talk to the character again, making different choices.

New York

With the game's intro sequence out of the way, you find yourself in New York, looking for Sophia Hapgood. Well, quite obviously she's on stage in this theatre but you are faced with the problem of getting in. There are two solutions to this, brute force or creative thinking. Before you attempt either though, it's wise to pick up the newspaper from the nearby stand.

To barge your way in, simply open the backstage door and confront Biff the doorman. Either talk your way past him or keep insulting him until you get into a fight and make sure you win.

If this proves too hard, though, try the alternative route. Continue past the door towards the alley and start to push the crates out of your way. If you notice the wall you'll see that there's an open window just waiting for you to crawl through. To get to it you simply have to push and pull the crates until you can walk right round to the ladder and climb in.

Once inside you'll have to listen to Sophia's lecture before you can make any further moves.

To get rid of the old stage manager, simply ask him about his hobbies and whether he reads much, then give him the newspaper. To get Sophia's attention you'll have to activate the fake ghost. Simply push one of the outer levers until the lights turn yellow, then the centre one to turn them green, then press the button and away you go.

Iceland

There's not much to do in Iceland the first time around, save talk to Heimdall in the ice cave and find out about Costa in the Azores and Professor Charles Sternhart in Tikal. You will however have to return here after visiting the Mediterranean, though, and when you do the Heimdall should have been frozen solid. This time round, the mouth of the bronze statue will be visible through the ice and requires a bead of orichalcum to 'defrost' itself. The eel statue should then be taken back to Costa.

Tikal

The first obstacle between your good self and Sternhart is the jungle. Each of the dark jungle paths leads to another but this isn't just a case of getting to the other side. To get rid of the anaconda around the tree it is necessary to get the jungle rodent to run out in front of it. Remember, you don't just move it by walking near it. Work out which entrance leads to the snake, try to get the rodent to the entrance either side of the correct one and use your whip to move him on a bit further.

Crossing the chasm by climbing the tree leads you to the temple of Tikal and the good professor himself. Keep talking to him until he asks you for the name of the lost diary and the parrot squawks "Name". Say you don't know, then talk to the parrot once Charles has gone. Say name and the parrot will give you the name of the diary. Return to
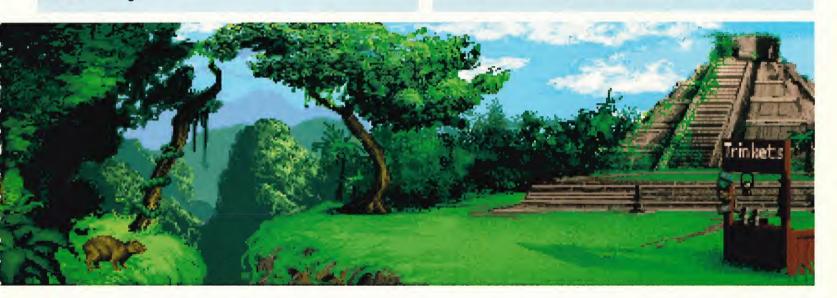
The Azores

As with Iceland, there isn't a great deal to do in the Azores the first time you visit, save talk to Costa. Make sure you get him into a position where he is willing to tell you where the lost diary of Plato is if you can give him something valuable. You will probably need to get Sophia to talk to him for this.

When you return after collecting the bronze eel statue from Iceland, exchange it for the necessary information. Make a note of which collection the lost diary is in as it will involve a different puzzle back at Barnett college.

Algiers

The first time you visit Algiers it should be to pick up the mask from Omar's stand. You'll need to get a balloon ticket from the beggar, but to get this you'll need to give him a squab-on-a-stick from the grocer. To get this, however, you'll need to trade the mask with Omar for the correct object. Talk to the grocer and offer him one of Omar's items. Listen to his replies for clues as to what to ask Omar for. Once you've obtained the ticket, you still have to get a knife to cut the rope on the balloon. You'll have to convince Sophia to take part in the knife-throwing act by pushing her when you talk her close enough.

Charles, give him the name and he'll let you in.

Once inside the temple you'll have to ask Sophia to keep Charles occupied while you nip back outside and grab the kerosene lamp from his souvenir stand. Open the lamp and pour the kerosene on to the stone carvings that are slightly loose. Pull the carving to free it and use it as a lever in the elephant head to open the ancient Atlantean's tomb.

You can't prevent Sternhart from stealing the crown, but don't worry, the real prize is the bead of orichalcum he leaves behind. You have to use this in the eel statue back in Iceland.

New York — Barnett College

Before you enter the library, go to your office and get the jar of mayonnaise from your ice box. Then, depending on which collection the lost diary is kept in, perform the following: if the collection is in the totem pole room, push the crate on the shelf and use the dusty key — from the urn upstairs — to open it. In the cat room, find the odd looking sculpture and melt it in the furnace.

In the fallen bookshelf room, wrap the arrowhead from upstairs in the dirty rag from downstairs and use it to unscrew the screws on the back of the shelf. Then open it and get the manuscript.

New York — Indy's office

Decision time. It's best to save your game at this point in order to be able to play all three routes without having to go through the first parts of the game all over again. So make your choice — wits, fists or team — and follow the appropriate instructions. So as not to give everything away, the rest of this solution will only concentrate on the team path. Help for all the other routes can be

gained from the normal QED Help Wanted channels.

Monte Carlo

The first step is to identify Monsieur Trottier and convince him to come up to Sophia's room. Make sure you've studied the lost diary of Plato first, making notes on what the god machine was used for, what Plato's main error was and where the city was said to be based to be able to answer Trottier's questions. Also make note of why he's taking a walk, why he fancies the idea of a spirit reading, etc.

Once he's upstairs you can either use Sophia to perform her spiritual act (using the knowledge that Indy gained) but you'll have to rely on pure luck to guess the final question. Save the game and try it a few times.

If this doesn't work, try Indy's method. You'll first need to visit Algiers and pick up an ancient mask

from one of the shops. When Sophia starts her routine with Trottier, open the cabinet and get the torch, open the fuse box and use the circuit breaker, pick up the bedsheet and use it with the mask and the torch and you should scare him silly. I know it's corny but it works OK? Once he's gone you'll be able to collect his sunstone.

That's where we leave Indy for this month. Next time in The Fate of Atlantis:

Thrill! as Indy and Sophia pilot a hot-air balloon across a nazi-filled desert.

Jump up and down! as Indy discovers a hidden labyrinth on the island of Crete.

Imitate a walrus! as Indy pilots a nazi submarine.

Go directly to jail, do not pass go, do not collect £200! as Indy uses his "Hi, I'm selling these fine leather jackets" line again.

Simulation School Lesson 2

Lift at 30-90 knots

100+ knots descent

Illustration 1

Illustration 2

Basic helicopter flight

Ahelicopter is a complicated beast. Unlike a fixed-wing aircraft where you simply have to worry about keeping up enough speed to stay in the air, a helicopter pilot has to constantly monitor, adjust and alter throttle, torque (see glossary) and rudder settings due to his close proximity to the ground.

The key to mastering any helicopter simulation therefore is being able to combine effectively the use of torque with throttle to perform a wide range of combat tactics. To this end, it's usually best to set your flight controls to a realistic level from the beginning and to remove any enemy (if your simulation allows for such options, if not, just stick to flying in a relatively safe area). Just spend some time in the air, flying from A to B to get used to how it works before you start attempting any of the combat techniques.

First flight

Turn on your engines and increase the torque until you start to rise. Once you've reached around 500ft, decrease the torque until you come to a hover. If you start to descend, quickly increase the power.

While hovering, get used to the rudder controls by rotating from left to right and the control stick by rolling left and right. Note how with most simulators you tend to slide from left to right when you bank. This can be a very effective manoeuvre in combat, allowing you to slide behind a hill to evade missiles and the like.

Now push forward on the control stick slightly. Remember, helicopters are sluggish and take a second or two to respond to the controls. This can be especially frustrating for keyboard players, so don't oversteer. Providing you have a fairly realistic flight model you should notice that as you reach speeds of 30-90 knots you begin to rise. This is called transitional lift. Increase speed further until you're travelling over 100 knots. Once you exceed this stage you'll see that you begin to lose height (illustration 1). If you get too low come back to a hover, gain some height and start again.

This is what you have to master to make really effective use of helicopter tactics — the balance between forward and vertical momentum. As you lose and gain height while accelerating, use the collective (see glossary) to try and stabilise your altitude. Essentially you have two separate controls when flying helicopters and it takes time to get used to monitoring both. Don't oversteer or make sharp violent manoeuvres, be gentle, smooth and patient.

In order to practise your flying, find an area quite heavily populated with hills and perform some NOE (Nap Of the Earth — see glossary) flying (illustration 2). Hop up and down over the hills and slide around them until you start to feel comfortable with the controls. Resist the urge to travel flat out, sometimes it's wiser to travel slowly and gain height than to mess around adjusting a constantly falling VSI (see glossary).

Don't worry too much about bank-ing the helicopter just yet, once you've mastered controlling your altitude you'll be able to deal with the loss of height that turning your aircraft invokes.
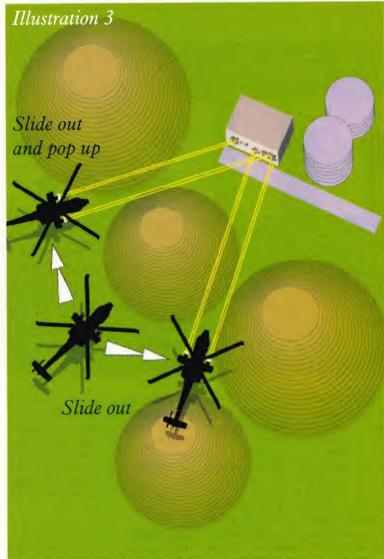
Combat

So how can you apply these forces to combat situations? The great beauty of helicopters is that they can fly extremely low without too much risk, can stop and turn on a sixpence, and can engage targets from a great distance without risk of exposing themselves to too much danger.

However, as with all things, there are disadvantages as well as advantages. Helicopters are extremely vulnerable to air attack, aren't fast enough to outrun missiles and become more visible to radar the higher they fly, which is unfortunate, as the lower a helicopter is, the closer it has to get to a target before it can fire on it.

This is where the pop-up tactic comes into play (illustration 3).

Illustration 2a

Banking into the turns

Illustration 3

Slide out and pop up

Slide out

The most important element in war is the element of surprise and no machine is better at it than an attack helicopter. The pop-up attack is so called because you fly in low to a target below any radar, hide behind a nearby hill of building and then pop-up to take pot shots before dropping back into cover before anyone realises what's happened.

Helicopters that carry mast-mounted cameras (such as the AH-6G Defender) can use this tactic to allow their cameras to survey the area before they launch into attack. If your primary target is surrounded by others and you only have a couple of missiles left, it's always best to know which targets to aim for.

The other way of using this tactic to attack a target is to slide out from behind your cover rather than popping up. This has the advantage of keeping your blind side covered while attacking instead of exposing your whole vehicle to the enemy. This does limit the range of your attack to whatever's immediately in front, though.

A good way to vary your attack and to keep the enemy guessing is to change positions once you've made an attack. After dropping back into cover, quickly fly to another hill and make another attack. If there's a long ridge to hide behind even better. Just keep selecting different position all the way along from which to make your attack.

Never, unless absolutely necessary, make strafing runs (see glossary) on groups of targets. You'll be cut to ribbons before you finish your run, you'll alert the enemy to your presence and give away your position and you'll more than likely end up in a burning wreckage of a machine, being dragged out of your cockpit and taken away for interrogation (assuming your simulator has such advanced options).

Review

Right, that's the theory out of the way, now to put it to practice. The first thing we have to test is whether you've managed to master the use of collective and throttle. Try to attain level flight at the following speeds and altitudes:

● 50ft at 40-50 knots
● 200ft at 100-110 knots
● 50ft at 120 knots

Remember, watch out for turbulence at the lower heights and don't oversteer. If you can manage the last one, you know you're starting to get the hang of it.

Now for a combat situation. Load up with missiles, rockets and/or bullets (make sure you take a couple of Stingers or Sidewinders to deal with an air-to-air threat) and enter a combat zone. Don't worry about any objectives given to you by the game, this is what you have to do:

Pick any enemy installation (an airbase, factory, tank depot, etc), preferably one surrounded by hills. Before you start your flight, plan out a route to the target that will allow you to make full use of the terrain and make a note of all the possible points of cover to use for pop-up attacks. Fly NOE towards the target, minimising your radar visibility until you reach one of your areas of cover. Now pop-up, locate and destroy *one* target, then take cover again. Scoot to the next available point of cover and continue doing the same until there's nothing left or you're out of ammo. Vary your use of pop-up and slide out attacks.

Once all that's been done it's time to take her home. Don't worry about any negative points you get for not completing the computer's set mission. As long as you managed to fulfil the above requirements, you're doing fine.

That's it for helicopters for the time being. In a later lesson we'll show you how to deal with air-to-air threats effectively, how to avoid missiles and how to make your Apache perform a 360 degree loop. Next month we're going to put you in the seat of one of the most advanced pieces of modern aviation technology known to man — a stealth fighter.

Glossary

Collective — Helicopter control that increases or decreases the amount of lift generated.

Nap Of the Earth flying — Low-level flight that sticks to the contours of the land, constantly increasing and decreasing altitude in order to remain at a fixed height above the ground.

Strafing runs — High speed dashes directly across or through an enemy's position, firing as you go.

Torque — The amount of rotational force generated in the engine, providing lift.

VSI — Vertical Speed Indicator. An instrument that shows your current rate of ascent/descent.

QED TIPS

Before we go anywhere, I have a message for Captain Ghost Rider who was featured back in Issue 9. Thank you for sending us proof of your identity. We would be sending out your prize, but unfortunately you once again forgot to include your address. Write to us and just to be safe include the name of the game you just sent us a solution for. Anyway, on with the tips.

Carrier Command

A feast of strategic know-how for one of the all-time classic war games from Craig Morris of Dover.

As you conquer new islands move your stockpile to within one island of your next target.

If you are attacking an enemy island, arm a plane with missiles and lasers, launch the plane and go straight for the command centre. Fire the missiles first, then use the lasers, making three runs. If it isn't destroyed by then crash into it to free the island (if that doesn't do it, launch another plane and do it all again).

When you attack the enemy's carrier, follow the same procedure but remember to put out the drones in this formation:

This is the best formation to use as the enemy planes only attack the front of the ship when you attack an island or the carrier.

Magic Pockets

This is actually for the demo given away on our cover disk on Issue 9 but should work in the actual game. According to John Butters of Choppington you should get as many points as you can and progress to the helmet laser.

When you reach the frogs, kill them with the laser until you see a gold star at the bottom right side of the screen. Put down the helmet and build up a whirlwind to full power then fire it at the remaining frogs.

Walk into the whirlwind and collect the gold stars. Another helmet should appear. Pick this up and you will be transported into another room. Walk off the edge of the platform and collect everything.

Civilization

This month's tip from Norway comes from Oivind Roste and is a handy little routine for speeding up development time in Sid Meier's classic.

When creating, for example, a road with the settler, remove the R letter from him, then put it back again. Repeat this several times in the same turn and the settler will finish his job in one turn instead of waiting around for several. This also works with all the other settler functions.

Sim City

A clever little tip this one, from Adam Martin of Surrey. Quite simply, it is the most effective way of increasing your city value in order to become more prosperous. All you have to do is build your city to the diagram below.

Make sure you surround each block with roads and once you've completed one crescent, start on another below it, eventually joining the two with main highways (as in the illustration).

Commander Keen

Two cheats here, one for Commander Keen I, the other for Commander Keen IV. In the first game, according to Andi Dryden of Milton Keynes, pressing C, T and Space during the game will provide you with 100 ray gun charges, all the key cards and the pogo stick.

Meanwhile for Goodbye Galaxy (CKIV), Irfan Beg of Wembley suggests using PC Tools (or similar) to gain infinite lives and ammo. Locate a saved game file and do the following:

● For infinite ammo locate the seventh line from the top and starting from the ninth column type FF EE.
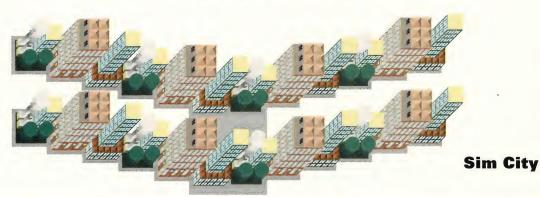
● For infinite lives locate the 11th line from the top and type FF in column 11.

Sim City

WWF Wrestlemania

If you've been wondering how to make this rather substandard beat 'em up a little more interesting, try the following cheat, from Martin Moriarty of Colchester, to get the chair into the ring. In the practice mode, get one man to take the chair to the top left hand corner of the boarded area then walk left, press fire once and walk back. Then get the other wrestler and take him to the top left post, press fire and the chair is brought into the ring. When you then go to compete, it will be waiting for you in the ring.

Hard Drivin'

What's the point of having a fast car simulator if you keep crashing every time you go over 40mph? Thankfully, Lee Cockett of Herefordshire has found a way to keep your car travelling at top speed all the way around the track. Select manual gears and start the game. Start accelerating and work your way through the gears until you're travelling at top speed, then quickly change into neutral and your car should continue to hurtle along of its own accord.

You know what a tip is. We know what a tip is. They know what a tip is. But unless you send them to us, nobody will know what the tip does. Send all your details to the usual PC Review address marking your envelope (quite clearly) QED Tips. The best one printed each month wins a free piece of software.

HELP WANTED

Having finally cleared the backlog that was Issue 8's mammoth Help Wanted column, we've decided to do it again. Read on for a massive list of souls in torment.

Star Trek 25th Anniversary
Unfortunately for captains Jennifer and John Guttridge of the starship Potters Bar, the final frontier is proving to be a little too tough to conquer. Their problem is with the Hijacked mission and the lack of basic phaser knowledge. They have the transmogrifier, the empty phaser welder, the phasers, the wire and the scraps of metal. They've freed the prisoners from the brig and have obtained the phaser bomb and the coil of red wire, but can't work out what to do next. It's not just a case of not knowing what to do, they also don't know what the controls to make hem do anything are. Detailed instructions here please.

Future Wars
The Guttridge family are back again with yet another problem, this time in Delphine's ageing classic. Having obtained the écu coin, the blowtorch, the fuses, the key, the lance, the gas capsule and the documents, they can't work out how to get a ticket to get on to the plane (or how to get past the guard at any rate). Any helpful time-travellers out there?

Leisure Suit Larry in the Land of the Lounge Lizards
I'm not sure if Mr Austin Price of Tyne & Wear is heading in the right direction with this game, but perhaps you can help put him right anyway. He's met, courted and married Fawn, supplied illegal substances to Faith and shared a Jacuzzi with Eve but can't — ahem — have his wicked way with any of them. He can find the inflatable doll but punctures it just as quickly. Please steer this one-track-minded individual back on course (before he goes blind).

Wizardry VI — Bane of the Cosmic Forge
Andrew Wong of Leicester would appreciate some help with Sir-Tech's role-playing spectacle. Can someone tell him how to look for Snoopcheri (I think) and where the captain's treasure chest is buried so that he can obtain the password from Queepueg (I think) to enter the captain's den. Your handwriting was a little vague at those points, Andrew m'boy.

Indiana Jones and the Fate of Atlantis — The Graphic Adventure
I was wondering how long it would take before we started receiving queries on this one. James Edwards from Middlesex is the man with the problem, namely freeing Sophia from the cage in Atlantis and finding a way past the big broken statue with the mechanical chestplate. James has linked the chain to the bronze loop and he has two statue parts and loads of orichalcum but can't get it to work.

Battle Command
At last, a problem that isn't from an adventure game! Many thanks go to Lee Smith of Cheltenham for getting completely stuck in Ocean's futuristic tank simulation. His problem is completing the last mission — U Bomb — because of the barrier between his tank and the bomb. Please do your damnedest to provide some kind of strategy for this budding young tank commander and prove that there is more to this section than just adventure game queries.

Might and Magic II
Time to help out the armed forces once again (hey, if you can't help out a soldier, who can you help out?). Mr N A Coleman (exact details of his rank, position and posting are unavailable) and his wife have been stuck on MMII for some time now. The problem is in the caves on Murray's Resort Isle, where they have found a way to restore hit points by rubbing themselves with oil. After successfully stealing Murray's treasure they noticed that all of their stats had been reduced to five. Although they were warned about stealing, the Colemans would like to know if it is possible to restore their original scores.

Eye of the Beholder II
Konrad Paszkiewicz (pronounced in the usual way) of Hertfordshire is about to have a meltdown if he doesn't get hold of the second Darkmoon key on level three (catacombs) after having already found Calandra and the dwarven healer. Help us stop this potential nuclear catastrophe, please.

Cruise for a Corpse
I'm not sure I should print this particular problem. I mean, how many detectives do you know that keep asking others for the solutions. Poirot never asked Hastings who killed Mr Green in the drawing room. Inspector Morse didn't keep pestering Lewis for the identity of the masked marauder. It wasn't Dr Watson that kept calling everyone together to reveal the identity of the murderer. Still, Stephen Leathem of Crowborough needs to know where to find the invitation cards. Once he has them he feels sure he'll be able to reveal all.

The Gold of the Aztecs
Hurrah! Another non-adventure game. Even if it is an old, obscure one I'm sure you'll be able to provide Taron J F Wyatt of Bolton with the answer he needs. He can't get past the crocodile on the swamp level. Can anyone tell him how?

Space Quest I
A couple of space-faring problems for a certain R Barkaway of Norwich. Firstly, he can't get past the laser beams once he's climbed up the cliff and taken the lift down. Secondly, he's found a monster in a cave near the start of the cliff but doesn't know what to do there.

Space Quest II
In the first of this two-parter we return to Norwich and Mr Barkaway who is having some trouble after freeing the little alien and getting the whistle. He simply doesn't know what to do next.

Also stuck in this space-related sequel are Chris Bussell and Peter Strudwick of Avon. They are in the canyon with the pink men and have said the word to make them move the rock from the tunnel, but they keep getting killed after going down the ladder into the blank screen. What's occurring?

King's Quest IV
Bussell and Strudwick (still of Avon) are also stuck in Roberta Williams's fourth fantasy instalment. They are in a whale's mouth (curious people) and they have a feather, but they can't work out where to tickle the beast to free themselves. I could be rude here, but I'm not like that.

Monkey Island II
To round off, we have that old favourite, LeChuck's Revenge. David Hall of Belfast, Belfast (so good they named it twice) has three questions to ask. Hopefully three answers will be forthcoming pretty sharpish.

First, how does he attract the monkey's attention with the banana? Next, which tool is used to stop the waterfall? And finally, what, apart from the Governor mumbling about weenies, is significant about his mansion?

And so we face the final curtain (for another month at least). If you have a problem, send it to us, marking your envelope quite clearly as Help Wanted, and if you have a reply to one of our queries, send it to us marking your envelope Help Supplied. If you are sending us some help, can you also mention which issue the problem was in and who it is for. You may just win yourself a free game for your trouble.

Cover disk

If you've bought the 3.5" disk edition of PC Review this month, you'll find you have a bonus in the shape of a playable demo of Legends of Valour, the forthcoming role-playing game from US Gold. Designer Kevin Bulmer created this demo especially for this cover disk, so you're getting an exclusive preview of the game itself. Both editions carry the first mission from the cold war adventure KGB, and there's a chance to win a snooker cue or a T-shirt with our competition demo from Jimmy White's Snooker. For full instruction on how to use the disks, turn to page 129.

Legends of Valour

3.5" only

US Gold's Legends of Valour promises to be one of the most spectacular RPG releases of this year, with its Ultima Underworld beating 3D graphics and huge playing area. The only way to appreciate how good Legends of Valour really is, is to sit down and play it. So, for your delight and delectation, this month's cover disk contains a specially created interactive demo.

In the demo you can freely wander around a section of the town in the game, although an invisible force-field will prevent you from getting to some areas, even though you can see them. Neither will you be able to access the upper storeys of any buildings, nor the dungeons beneath the town.

During your exploration, you will occasionally encounter other inhabitants of the town. In the complete game, you may, if you wish, insult them, attempt to pick their pock-ets or ask them questions, but in this demo you are limited to asking questions.

Have fun, and look out for a familiar face from the pages of PC Review!

Controls

Beneath the main 3D screen are two groups of nine icons. The group on the left are your movement icons. From top to bottom and right to left, they are: turn left; walk forward; turn right; step left; run forward; step right; turn around, and walk backwards. The final one is not used in this demo.

Of the group of icons to the right, only the leftmost one in the middle row and the bottom three are used in this demo. The middle row icon calls up the map. Once the map is displayed, you current position is shown as a bright dot. Use the mouse to scroll the map up and down and press any key to exit.

The icons along the bottom row are, from left to right: sleep; use the object you are currently holding, and hail a passer-by.

While you are using the sleep icon, a dialogue box appears on-screen in which you should click on the number of hours you wish to sleep, or X to exit.

When you hail someone, they may ignore you, or they may decide to walk over and talk to you. If the lat-ter happens, you will automatical-ly go to the conversation menus from which you can construct a number of questions. The respons-es will appear in the scrolling mes-sage line beneath the 3D display.

You will, from time to time, notice objects lying around on the ground. To pick an object up, you must first move over it. It will appear in the window to the left of the screen. To pick it up you should now click on the image in this window. The first object you pick up will appear in the window to the right of the dis-play. This is the object you are cur-rently holding. Subsequent objects will appear in the windows above this, which show the contents of your backpack. To swap an object in your backpack with one in your hand simply click on the object in the backpack that you want to hold.

To drop the object that you are holding, click on the drop icon beneath the hand window. To throw the object you are holding, click on the throw icon above the hand window.
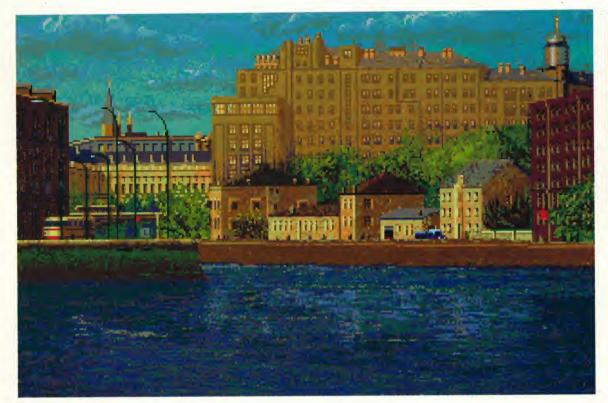
The compass shows your direc-tion, but can also be used to move around quickly. Clicking with the left mouse button around the cir-cumference of the compass will turn you immediately to face in that direction.

Clicking on the compass with the right mouse button will put you into a movement mode. Now, as you move the mouse from side to side you will turn, and if you press the left mouse button, you will move forward. To get back to nor-mal mode, press the right mouse button again.

How to load

After installation (see page 129), log on to the Lov directory, and type:

DEMO (Enter)

Left, digitised scenes of Moscow from the demo of KGB.

KGB

3.5" and 5.25"

It's 1991, and perestroika is leading to hectic upheavals within the Soviet Union, while Mikhail Gorbachev is coming under increasing pressure to bring the economy to heel. The black market is booming and as Maksim Rukov, you are assigned to KGB Department P, to investigate numerous cases of corruption among KGB officers. Ultimately, even Gorbachev's life itself is at stake in this fascinating graphic adventure from Cryo and Virgin Games.

This cover disk comprises the first mission from the game proper. In this extract you get the full point-and-click interface, all the character interaction and a full complement of objects and locations from your assignment to investigate the death of ex-KGB agent Pyotr Golitsin.

Controls

You should have a 'smart' pointer on-screen, which takes the form of the most appropriate action for the current screen. If you suspect that your pointer possibly isn't too smart, click the right mouse button, and select 'smart pointer' from the ensuing menu.

You can perform a number of actions. To examine objects and locations, simply click on them. The pointer will flash if it's currently over an item that needs closer attention — because there's something to be collected here.

Collected objects go in your inventory, which is shown in the centre of the control bar at the bottom of the screen. To bring the inventory up full size, click on it with the left mouse button.

With your full screen inventory, the pointer isn't 'smart' — use the right mouse button to bring up the menu of actions you can perform with inventory objects. You should always 'take' the object first before you 'use' or 'drop' it anywhere. To use an item in the main game screen, drag it to the location picture at the bottom of the screen and click with the left button.

Click on the location picture in order to exit the inventory and return to the game.

You can, if you wish, also talk to other characters: click with the left button when the pointer reads 'talk'. You'll be given a menu of possible conversation points — select the one you require by clicking with the left button.

The 'rewind' and 'stop' VCR style icons to the left of the dialogue box are used to back up through the menus, or exit the conversation altogether.

The spanner icon at the bottom left is the access point for game saving and loading and KGB's clever rewind and backtrack features. You can use these on the cover disk extract as well as in the full game.

Hints and tips

Don't read this section if you want to tackle the mission on your own.

● Examine everything; trace the pointer over every new location. When it flashes, there's something underneath it that you need to find.

● Don't leave Golitsin's office without unlocking one of the sets of drawers. To find the key ... well, try asking for it.

● Read the review on page 76 for the odd hint or two.

Good luck, comrade.

How to load

After installation (see page 125), log on to the KGB directory, and type:

KGB (Enter)

Jimmy White's Whirlwind Snooker

3.5" and 5.25"
(286 and upwards only)

This is a rolling, or non-interactive, demo from the acclaimed snooker program devised by Archer Maclean and published by Virgin Games. In conjunction with Virgin, PC Review is offering you the chance to win a snooker cue or a T-shirt if you can answer the question given below, and also on the demo itself. We've got five top quality snooker cues for the first five correct entries, and 100 (yes, 100) T-shirts for the runners-up, to give away in this competition.

The demo gives a good idea of Whirlwind Snooker's intuitive interface and superb graphics, as the unseen potter clears the table.

How to enter

However, to be in with a chance of winning those prizes, we want to know from you:

How many balls in total are on the table at the start of the demo?

So, yes, we do mean including the white ball.

Watch the demo carefully, and when you think you know the answer, enter it on the form below (or use a photocopy if you don't want to spoil the magazine). Stick the form to a postcard or the back of a sealed envelope and send it to

Snooker demo competition
PC Review
Priory Court
30-32 Farringdon Lane
London EC1R 3AU

The closing date for this competition is November 20, 1992, and entries must be received by then to be in with a chance of winning. We'll announce the results in the February 1993 edition of PC Review.

Faulty disk?

PC Review's cover disks are checked and validated, but if you have reason to believe yours is faulty, pop the disk(s) in a jiffy bag with a self-addressed envelope and postage to the value of 28p (55p from overseas) for return of the new disk, and the form below (filled in) and send the package to the following address:

> PC Wise
> Dowlais Top Business Park
> Dowlais
> Merthyr Tydfil
> Mid-Glamogan
> Cymru
> CF48 2YY

Please DO NOT send the disk back to PC Review - we don't hold stocks of spare disks.

Name:...
Address: ....
....
....

The disk on my copy of PC Review was damaged. Please send me a replacement – I enclose return postage to the value of 28p (55p if overseas) and the original disk.

Snooker demo

There are .... balls in total on the table at the start of the demo.

Name...
Address.......................................
....
....
....
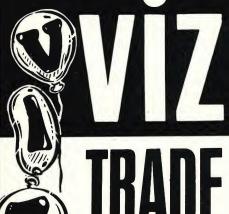
Tick this box if you do NOT wish to receive any further information from companies associated with this competition.

Closing date: November 20, 1992

PC Review November 1992

Rules
The winners of the snooker cues will be the first five correct entries drawn at random after the closing date. The winners of the Virgin T-shirts will be the next 100 correct entries drawn at random. No entries received after the closing date will be considered. Only ONE entry per person, please.

No purchase necessary. Free cluesheets are available from PC Review at the address given above.
No employees, or their relatives, or associates of Virgin Games or EMAP Images are eligible to enter the competition.
The editor's decision in all these matters is unequivocally final.

How to use the cover disk

All the programs

1. Put the cover disk into any disk drive and log on to that drive. For instance, if you have put the disk into drive A: type:
   A: [Enter]

2. Now type:
   PCR [Enter]
   to load the installation program.

3. There may be a menu asking you to select which language you wish to have the installation messages displayed in. To make your selection use the mouse or cursor keys to move the highlight bar and then click the left mouse button or press the Enter key.

4. A list of programs on the disk will now be displayed. To select the program you wish to install or run, use the mouse or cursor keys to move the highlight bar and then press and release the left mouse button or the enter key.

5. If the program is of a type that runs directly it will do so now before returning you to the menu and step 4.

6. If the program has to be installed to another disk you will now have to tell the program where you want it to be installed.

7. The program will suggest a drive and directory to install the program to. If you are happy with the suggested location, press the enter key and installation will begin.

8. If you would like the program to be installed to a different drive and/or directory, backspace over the suggested pathname and enter another one. You cannot install the program on the cover disk itself.

9. If there is insufficient space on the disk you have specified, or if the directory you have specified cannot be created, the program will inform you of this and give you the opportunity to enter an alternative location.

10. All being well, the program will now be decompressed and installed at the specified location. You will see a series of messages on the screen as this happens.

11. Once the program has been successfully installed you will see a message reminding you of where it was installed to and telling you which command starts the program. Press a key to return to step 4.

12. When you have installed or played all the programs that you wish to, press Esc to exit to DOS.

KGB

To start playing KGB, you must log on to the drive and directory where the program was installed. This is probably C:\KGB, unless you chose another drive or directory during installation. Type CD C:\KGB (Enter) to log on the KGB directory. To start the program, type **KGB (Enter)**

Jimmy White's Whirlwind Snooker

To see the Snooker demo, you must log on to the drive and directory where the program was installed. This is probably C:\SNOOKER, unless you chose another drive or directory during installation. Type CD C:\SNOOKER (Enter) to log on the SNOOKER directory. To start the program, type **SNOOKER (Enter)**

Note: To exit from the Jimmy White demo, you will need to reset your PC.

Legends of Valour

To start playing Legends of Valour, you must log on to the drive and directory where the program was installed. This is probably C:\LOV, unless you chose another drive or directory during installation. Type CD C:\LOV (Enter) to log on the LOV directory. To start the program, type **DEMO (Enter)**

Important note for users of the 5.25" edition

The compressed files for the program, KGB, are split across the two disks. This means that you must install both disks before the program will work. When you install the second disk, the program may warn you that the directory already exists and ask you if you really want to install the program there. If this happens, you should simply press the Y key for yes.

Important notes for users without a hard disk.

1. Providing that the programs will fit, you can install them on to another floppy disk.

2. If you have a twin drive system you should leave the cover disk in one drive and install each program to a blank formatted disk in the second drive.

3. If you only have a single disk drive, you can install the programs to a blank, formatted disk using the same drive. You should specify drive B: when asked for an install path. DOS will now prompt you when you need to swap the disks. When it asks you to insert the disk for drive B: you should insert the blank disk. When it asks you to insert the disk for drive A: you should put the cover disk back in. You will have to swap disks several times during the installation process.

4. On some occasions you may be asked to insert a system disk. In this case you should insert a system disk instead of the cover disk, and then swap them again when prompted to do so.

Important note for users with mono, LCD or plasma displays

1. The installation program should automatically detect whether you have a mono or colour display and run in the appropriate mode.

2. If you have a grey scale LCD or plasma display you may prefer to run the program in mono rather than colour. You can do this by starting the program with the command:
   PCR M [Enter]

3. If you have a non-standard colour display which the program fails to detect you can force it to run in colour mode by starting it with the command:
   PCR C [Enter]

Helpline

If you have followed the instructions on these pages and are still having difficulty in getting your disk to operate, please telephone our helpline number below before returning the disk.

Disk helpline: (0685) 350505

Note this is a new number! The helpline operates between 10.30 am and 13.30 pm weekdays. If at all possible, please have your computer up and running and your cover disk ready when you ring the helpline.

If your telephone is not near the computer, then please note down as much information about the fault as you can and have pen and paper handy before you call.

Please note

PC Review's cover disks are rigorously checked at each stage of production for all known viruses and duplicated under strict quality control.

However, cover disks are used at the readers own risk. PC Review can accept no responsibility for damage to either data or hardware caused by use of our cover disks.

We also make every possible effort to ensure that the contents of the cover disk are exactly as advertised. If, however, circumstances should dictate that we are unable to supply the stated programs we will endeavour to provide alternative software.

PC Review, its distributors and retailers will not be held responsible for any unnotified change to the contents of the disk.

Upgrading your PC
Getting more out of DOS

Improving the performance of your PC isn't just about hardware. However pixel perfect your screen resolution, however speedy your processor, if your operating system doesn't leave enough free memory or your files are scattered to the four corners of your hard disk, you will find things hard-going. Here, we explain a few commonly asked questions about DOS, particularly about upgrading to MS-DOS 5 if you haven't already done so, and, over the page, there's a buyers' guide for reference books to help you further.

While the business community flocks towards Windows (Microsoft claims there are currently nine million Windows users), the games player is still best served by DOS, largely MS-DOS. The number of games specifically designed to be run from Windows is still small, even if Microsoft itself is getting ready to leap into the market. Even if all you ever do is load up Lemmings, you need some knowledge of DOS — you need to direct the screen to log you on to the right disk and subdirectory and you need to issue the correct command to get the thing working.

Not that many PC owners get beyond the necessary housekeeping tasks with DOS: copying files from one disk to another, deleting files, creating subdirectories and listing their contents on-screen. If you own a version of DOS lower than 4.0, you are stuck with the command line interface; in DOS 4.0 and 4.01, there is a pseudo graphical user interface called Dosshell; in DOS 5.0 a much better version of the Shell program. Upgrading to DOS 5.0 is surprisingly easy and well worth the time and money.

Oddly enough, the benefits of upgrading to DOS 5 are greater if you are currently using 4.x than if you have DOS 3.3. DOS 4.0 and 4.1 were very much interim releases, while DOS 5 is a substantial upgrade and contains many new features to help optimise more powerful PCs.

The advantages of using DOS 5 can be summed up as the following:

● more memory left free for loading programs, especially if you have 1Mb or more of RAM, since DOS itself can then be loaded 'high', ie, into the area above 640K, with a line in your Config.sys file;

● easier command usage, including a single keystroke facility to replay commands which is far more versatile than the F1, F2 and F3 templates in previous versions;

● a Dosshell which is halfway decent and usable;

● a text editor, which, unlike Edlin, doesn't require you to be a previous winner of The Krypton Factor to make sense of;

● general future-proofing. There are a few games on the market which require DOS 5 to run, and these are likely to increase over the next year or so.

One reason why people hold back from making upgrades is that no sooner do you splash out on anything for the PC, than the Next Big Thing is announced and deemed to be impossible to do without. And, yes, sometime next year, we can expect to see MS-DOS 6. Still, it is virtually unthinkable that Microsoft won't make cheap upgrades available for existing owners.

If you're already using MS-DOS 2.11 or later, don't buy the full-blown package; instead you can buy the Microsoft MS-DOS 5.0 Upgrade. This is an exceptionally painless way to upgrade your machine. Simply stick Disk 1 from the upgrade pack into drive A: (it must be drive A:, not drive B:), log on to it and type **Setup**, and the program does most of the upgrading work for you. You'll need a blank disk ready to insert into the machine as well, but apart from that, the whole operation takes about 15 minutes.

Making a boot disk
Device drivers, TSRs and DOS itself eat into your precious 640K of base RAM to a frightening extent. Games, on the other hand, increasingly need around 550K upwards in order to run. Your standard PC set-up in Config.sys and Autoexec.bat, which, say, calls up a mouse driver, soundboard driver, maybe a CD-ROM driver, memory-resident virus checker or a desktop organiser, simply won't leave enough free memory to run some games.

The answer, unwieldy though it is, is to make a boot disk specifically for those troublesome games.

You will need:

● a blank formatted disk, which will go into drive A:

● a disk label and a pen

● to have your PC switched on and logged into the DOS directory (or whatever the directory where you keep DOS is called, and if you have a Path=c:\dos command in your Autoexec.bat, you can be sitting in any directory you like.)

Put the blank disk into drive A:, and type the following:

SYS A: [Enter]

START-UP FILES

Below are some typical commands you may find in your Autoexec.bat and Config.sys files. You can type in these lines from any word processor that will save files as plain ASCII. In MS-DOS 5, type **EDIT AUTOEXEC.BAT** (or CONFIG.SYS) at the DOS prompt to take you into its text editor.

An inelegant, but effective way to create a start-up files is to type the file at the DOS prompt. First type the command **COPY CON AUTOEXEC.BAT [Enter]**, which tells DOS to copy the following lines to the screen (Con stands for console).

Then enter the lines needed for the file, then at the end press Ctrl-Z, which tells DOS you have finished the file. YOu should now see the message "1 File(s) copied".

AUTOEXEC.BAT

KEYB UK,, \DOS\KEYBOARD.SYS [Enter]	tells DOS to use the UK keyboard, and, after the commas, tells DOS where to find the requisite file.
PROMPT $P $G [Enter]	means that the C: will also always show which subdirectory you're currently in
PATH=C:\DOS;C:\MOUSE [Enter]	means you'll be able to use commands in the DOS directory and MOUSE directory from any other subdirectory
MOUSE [Enter]	loads the mouse driver (your mouse driver may be GMOUSE, or MMOUSE, or similar — check in your mouse manual)

CONFIG.SYS

COUNTRY=044,, \DOS\COUNTRY.SYS [Enter]	tells DOS to use UK parameters for times, dates, etc (in DOS, countries are identified by their international dialling codes).
DEVICE=C:\MOUSE\MOUSE.SYS [Enter]	some mice are called up with Mouse.com, or Mouse.exe in the Autoexec.bat, some with Mouse.sys in Config.sys. Anyway, if the file extension is .sys it goes in Config.sys.
DEVICE=C:\SBPRO\DRV\SBPCD.SYS [Enter]	calls up the Sound Blaster Pro driver
FILES=20 [Enter]	
BUFFERS=20 [Enter]	these two lines tell DOS how many files it can have open at once. Some programs require a certain minimum number, but 20 of each is good enough for most.

Once you've created an Autoexec.bat or Config.sys file, you need to reset the machien to see the effects take place. Note that these are basic sample files only, and your own Autoexecs and Configs may well differ. Many programs will alter your Autoexec and Config files, prompted, or unprompted, especially the Files and Buffers lines, in order to configure them for the program's requirements. This isn't 'harmful', but it does mean that these files can look very messy after a while.

What this command does is to copy the essential start-up files that DOS needs on to your A: disk, and no others. If, when the files have finished copying, you do a directory of A: (**DIR A:**), you'll only see one file, Command.com, listed. In fact, the two hidden system files, Io.sys and Msdos.sys (as they are usually called), are there as well. You can verify this by typing **Chkdsk a: [Enter]** and the resulting on-screen report will list two hidden files.

Label the floppy as a boot disk to prevent any accidental reformats in the future. Now, when you want to play something particularly memory-hungry, put this boot disk into drive A:, and switch on, or, if the PC already is on, press the reset button or Ctrl-Alt-Del for a soft reset.

The point of doing this is that when switched on, the machine will always look for the operating system in drive A: first, before it looks on the hard disk. That's why, if you inadvertently leave a disk in drive A: after switching off, you'll get an message when you switch on again, saying, "Non-system disk or disk error".

Therefore, with a boot disk, you load up DOS just with those three essential files, and a lot more memory free. Of course, you'll also be without all those little luxuries, such as the Chkdsk or Xcopy commands, the files for which are sitting in the DOS directory on your hard disk and haven't been loaded in with the boot disk. You'll also notice that you're missing anything from Config.sys and Autoexec.bat (they weren't on the boot disk).

Some of these, such as asking you to input the date, or the Prompt command, or even the UK keyboard, you can do without for the purposes of playing Memory-Guzzling Game from Hell, but you'll probably want the mouse driver and the stereo sound that goes with it.

Either create a special Autoexec.bat and Config.sys for the boot disk, which are as minimalistic as possible, or, if, say, it's just the mouse you need, you can load that up from the C: or C:\MOUSE prompt as normal.

DOS 5's shell offers menus and mouse control for commands.

The File menu: you simply click on the commands to execute them.

The DOS 5 upgrade program takes you through the installation …

… and can usually detect the configuration of your PC.

Books - a buyers guide

If you want help with MS-DOS 5 then there are plenty of books at all levels. The following is a selection of titles recommended for everyone — from the complete beginner to the experienced and advanced user. Many of these titles will be stocked by local bookshops, but if you prefer a mail order service all of them are available through Computer Manuals, 50 James Road, Birmingham, B11 2BA, tel (021) 706 6000, fax (021) 706 3301, and Just Computer Books, 111 Court Road, Malvern, Worcestershire, WR14 3EF tel: (0684) 568095, fax: (0684) 568095.

Title (level, scope)	Author	Publisher	ISBN No	Pages	Price
Advanced MD-DOS Programming 2 (high level info for C programmers)	Duncan, Ray	Microsoft Press	1556151578	688	£22.95
A Consise Introduction to MS-DOS (beginner, only versions 3.x and 4.x)	Kantaris, N	Bernard Babani	0859341771	98	£2.95
A Consise Advanced User's Guide to MS-DOS (advanced, versions 3.x and 4.x)	Kantaris, N	Bernard Babani	0859342093	68	£2.95
Discovering MS-DOS (also covers windows and DESQview)	The Waite Group	SAMS	067222772X	300	£18.50
DOS for Dummies (covers through with 5.0, tips, beginners)	Gookin, Dan	IDG Books Worldwide	1878058258	294	£15.45
DOS Power Tools: Techniques, Tricks and Utilities (includes three disks)	Somerson Paul	Bantam Books	0553354647	1,088	£46.99
DOS 5.0 Self Teaching Guide (beginner, intermediate)	Ashley R & Fernandez	Wiley	0471551910	368	£16.95
DOS 5 Users Guide (wide spectrum)	Gookin, Dan	M&T Publishing	0132192470	771	£17.95
Easy DOS: Version 5 (beginner, illustrated with colour screens)	O'Hara, Shelley	Que	0880228547	200	£18.45
First Book of MS-DOS 5 (complete beginner)	Nimersheim,	JackSAMS	0672273411	285	£15.95
Microsoft Guide to Managing Memory with DOS 5 (intermediate/advanced, installing, configuring, optimising)	Gookin, Dan	Microsoft Press	1556153813	225	£9.95
MS-DOS 5: A Power User's Guide (upgrader, intermediate, UK-specific)	Fairhead, Harry	I/O Press	1871962137	324	£18.95
MS-DOS Batch Files: Quick Reference (intermediate, batch files)	Jamsa, Kris	Microsoft Press	1556153384	188	£5.95
MS-DOS Developer's Guide, 2nd ed (advanced, requires assembly language)	The Waite Group	SAMS	0672226308	n/a	£27.50
MS-DOS Encyclopedia (experienced MS-DOS, programmers)	Duncan, Ray	Microsoft Press	1556151748	n/a	£48.95
Peter Norton's DOS 5.0 Guide (4th ed) (beginner/intermediate)	Peter Norton	Brady	0136630480	498	£21.70
The Waite Group MS-DOS 5 Bible (4th Ed) (intermediate, advanced reference)	Simrin, Steven	SAMS	0672227894	718	£27.95
Up and Running with DOS 5 (complete beginner)	Simpson, A	Sybex	0895887746	140	£9.95
Upgrading to MS-DOS 5 (upgraders confident a with previous version)	Que Development	Que	0880226730	388	£13.95
Voodoo DOS Versions Through 5 (tips and tricks, intermediate/adv)	Nelson, Kay	Ventana	0940087952	278	£18.45

Q&A

Bemused, befuddled, or bewildered about your PC? If your hardware gives you headaches and you're stricken with software seize-ups, share your problem with Q&A's Mike James and he'll endeavour to help

Wrong RAM?

Q I have recently bought a PC with a 386DX chip running at 40MHz. However, to my surprise, unlike the 2Mb expanded RAM that I asked for, I've got the standard 1Mb and 1Mb of extended RAM. Do you know of any way of turning this extended RAM into expanded RAM without replacing the chips?

B Afzali

A You may have asked for 2Mb expanded RAM but it is very rare to find real expanded RAM on a 386-based machine. The reason is that it is fairly easy and more flexible to convert the extended memory to expanded using software. What you need is a memory manager. If you are using MS-DOS 5 you need to look up EMM386. This is also provided with some earlier versions so it is still worth looking for even if you haven't got MS-DOS 5. If you don't have EMM386 then buy QEMM or 386Max, which are both very good

memory managers. If you do have to spend money, don't feel too bad, because actually fitting expanded memory to your machine would have cost more than the extended memory that you got and it wouldn't have been nearly so flexible.

Hardly a bargain

Q I recently went to a computer auction in London and picked up some hardware which I thought was a bargain. I purchased a Seagate ST157a hard disk, a Seagate 1120a hard disk, and a TEC daisywheel printer. This cost me about £130, so I thought it was a good deal, but I was mistaken.

When I connected the ST157a hard disk to my machine and ran a piece of software called Disk Manager, which is published by Seagate, it told me the disk could not calibrate itself. I then tried the ST1102a disk and when I powered it up it made an unhealthy grinding, clicking sound which didn't sound very healthy. I ran Disk

Manager and it said the disk had a calibration problem. Is it worth trying to get it repaired?

The daisywheel printer runs fine except that I don't have a printer driver. I can do a print test and it will work but I don't know where I can find drivers in order to use it with programs.

Martin Clay
Banbury
Oxon

A Hard disks are a problem: they shouldn't be moved or treated roughly, so they don't make good auction items. The calibration failure means neither disk can move its head back to track zero and this is such a serious fault that it makes the drives more or less worthless. I don't know of any firm who'd repair a drive fault for a price that would make it worthwhile. If any reader knows differently, let me know: I too have collected a stack of broken drives over the years!

If you bought the drives at a properly set up auction you should be able to get your cash back unless

the drives were sold as broken. It is worth checking what the conditions of the auction are.

When it comes to the daisywheel printer you have probably fared little better. Daisies are now so out of date that finding a driver for recent software is unlikely. The best I can suggest is to try the standard Diablo 630 driver that comes with most applications that support daisywheels. This was as close as we ever got to a daisywheel standard.

Windows 3 on a 2086

Q I have been told that Windows 3 can't be installed in a fully satisfactory way in the Amstrad 2086/30 with a hard disk, and VGA screen. Is this true and if so, why?

It is said that in monochrome there are no problems with VGA, but in colour it can only be installed with EGA and using Windows 2's screen drivers. Even this way, there are problems with Paintbrush, because the drawings made with it

can't be viewed after they are saved, and when the file is opened you can only see some stripes similar to bar codes. I would like to know if there is any way to install it or if the information I was given is right.

**Ivan Anglada
Madrid**

A *I occasionally have to answer a question where what I really feel like doing is asking, "Why do you want to do this anyway?". You spend hours of frustration and hard work and at the end of the day what you have isn't worth the effort. Still, to answer the question — there are difficulties in running Windows 3.0 on an XT (8088/86) based machine and you cannot run Windows 3.1 at all. In principle, Windows 3.0 will run on an XT in real mode but the programmers at Microsoft included specific 286 instructions in many of the video drivers. Hence the emphasis in your question on different video modes. The only video driver that I know of that will work on an XT is for low resolution CGA. I suppose the Microsoft people felt that if you had an XT then CGA was all that could be expected. This is the reason why you have to go back to Windows 2 screen drivers if you want to work at EGA resolution and Windows 2 drivers don't work very well with Windows 3.0. So in short you could try installing Windows 3.0 for CGA mode but I doubt if you would want to work with the result. So should we be angry at Microsoft for not supporting the XT in Windows 3? I personally think not because if they did support it better I would be answering lots of letters starting — "Windows 3 is so slow on my XT as to be unusable. What can I do about it?"*

The no-joy stick

Q I have a problem with my joystick, or games card. When the stick was new it seemed to function perfectly but after a few weeks it became hyper-sensitive in some directions and hardly responded in others.

The problem got progressively worse and I tried adjusting the trims but it only forestalled the inevitable malfunction. I have also tried replacing the joystick but the problem then re-occurs.

I am thinking of making a clean sweep and buying a Gravis Mousestick and card. At £89.95 this is an expensive remedy, so I would like your advice on whether to buy the Mousestick, another joystick, joystick and card, or Mousestick and card.

**David Combes
Tenbury Wells
Worcestershire**

A *The trouble lies in the games card and not the joystick itself. The games card is responsible for most of the work in determining where the joystick is positioned.*

Joysticks do fail and when they do the result is usually a jerky sort of movement of the graphics that is being controlled. The hyper-sensitivity that you report is most probably caused by a failure of one channel on the games card. If all you want to do is to correct the fault, then, given that you have tried another joystick, I would change the games adapter card.

On the other hand, if you want a superb joystick then by all means buy a Gravis Mousestick. I haven't used one yet myself, but people I trust tell me that it is difficult to go back to a traditional stick once you have tried one.

Which machine

Q I am looking for a PC. I want it to be fitted with a VGA graphics card and Sound Blaster v2.0. The hard drive must be over 40Mb and have a processor that is 16Mhz or higher. I would want both kinds of floppy drives to take all software. Please could you tell me which one to get?

**Andrew Dickens
Penn
Wolverhampton**

Beyond the Spectrum

Q I have a Spectrum 128K PC on which I play games - Scrabble, Chess, Golf and, in particular, a soccer management game called Treble Champions. These are the kind of games I want to continue playing, as opposed to the Star Wars, Robots, or Mutant Turtle kind. Can you please tell me what a model of computer I should upgrade to in order to get a better quality image and to take advantage of newer of the types of games?

Also, exactly what should I look for when buying, how much do I need to pay (I'm not that well off), and do I need to buy a monitor? (At present I use a portable colour TV)?

**Ron Weir
Haverhill
Suffolk**

A *The days when the Spectrum was an exciting new machine seem a long way off now but they provided lots of fun at very low cost. I will avoid the jokes along the lines of getting a 'proper' machine at last, because there are some serious points here.*

The most important and obvious point is that the cost of a PC is still very high, compared to even a fully expanded Spectrum As a result, buying a PC isn't something that you should approach in a frivolous spirit — a PC is forever and not just for Christmas! You need to do some research and be prepared to spend over £500 for the machine in the first place and go on adding to it over the coming months and years.

If this seems like too much money to throw at the problem of running games software, then you are probably better off sticking with a Spectrum, rather than trying to cut corners on buying a rock bottom PC. There are some complete PC systems on the surplus market for as little as £99 at the moment and while these may still be usable for some applications, graphics intensive games need more power than they offer.

In answer to both Andrew and Ron, I can't supply you with a "this is what you need" list: there are too many decisions to be made. All I can do is answer your specific questions: yes, you will need a monitor, TVs just aren't up to displaying high resolution images. You need to read up on the subject and look carefully at magazine adverts — PC Review is a good place to do both!

Finally, to get you started in looking, my own minimum cost system would be a 386SX-based PC running at 20Mhz, 40Mb hard disk, 4Mb RAM, SVGA video, games port and joystick. I would then upgrade the machine later with a Sound Blaster card and perhaps a CD-ROM drive but these are minimum specifications. If you can do better within your budget so much the better.

Commodore upgrade wanted

Q Please help me! I am lost in a new world. I have recently upgraded from an Amiga to a Commodore 386SX 20 with a SVGA monitor and Sound Blaster card.
1) I have bought Wing Commander 2 and Links. Would a maths co-processor speed these games up?
2) The Commodore has 'snap-in' technology — the processor just slots out of the motherboard. How would I upgrade the processor to increase speed — I rang Commodore and they hadn't got a clue!
3) Is it better to buy a SVGA card with an accelerator or without it?
4) With a hard disk compactor program would I be able to compact games to free space on my drive?

**M Hogan
Bolton
Lancs**

A *From the top: 1) No — see last month's Q&A Update. 2) I have no idea either, but then I have an excuse — and Commodore doesn't. Get back on to the company for details, but you should expect to have to buy a small processor card to replace the existing one. 3) Always better if you are planning to run Windows 3 but in other cases it depends on cost differences. With a 386SX you should see a difference between a standard and accelerator card. 4) A disk compression program packs data into the existing disk space more efficiently — it does not increase the amount of storage that you have. Some games already use compression techniques and even those that don't often store images in a compressed form.*

This means that the effect of a compression program will vary according to which games and programs in general you are using. In most cases you should be able to achieve at least a 25% compression — but not the 50% and more often claimed.

Mouse hole trouble

Q Can you give me some help in order to enable me to play a complete 18 holes of golf using Links? I am using a Viglen 386DX with 4Mb of RAM. At some

stage during play I lose my mouse cursor, locking up the game. I have also had problems using the mouse during the setting up of combat missions playing Jet Fighter 2. I have invested in Quarterback's QEMM memory manager to uncover my conventional memory and load high my mouse device driver, etc.

Perhaps you could tell me the essential difference between Mouse.com and Mouse.sys. Do I have a memory problem or is it my software at fault?

**I Van Der Plank
London**

A *The easy bit first — there is no real difference between Mouse.sys and Mouse.com except that one, Mouse.sys, is loaded in the Config.sys file and the other can be loaded at any time you like. For example, including the line Device=Mouse.sys in the Config.sys file ensures that the mouse driver is loaded every time you start your machine. If you don't include the mouse driver in Config.sys then you can load it by typing Mouse at the command prompt before you run a game that uses it.*

Now the difficult bit — what is causing your mouse to retire to the 19th hole during a game? There are two possibilities — wrong mouse drivers and driver/memory conflicts. You have to make use of the

Mouse.com and/or Mouse.sys that was supplied for use with the mouse. It isn't unknown for a program to copy the Microsoft mouse drivers over the top of your mouse driver. Often the wrong mouse driver will work for a while and then just give up.

The second possibility is more likely. It sounds like two devices or two device drivers are using the same area of memory or the same interrupt. The only way you can check this is to make a complete list of the addresses and interrupts that each device if using.

Try removing all unusual devices and reduce your Config.sys and Autoexec.bat to a minimum (ie, get rid of QEMM, etc) and see if the problem goes away. If nothing cures it then you might have a hardware problem but I think this is unlikely.

Send your queries to Q&A, PC Review, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU, or, if you have access to CIX, the Compulink Information Exchange, you can e-mail us at: pcreview@cix.compulink.co.uk. Mike James can only reply to your problems on this page, so please don't enclose SAEs or requests for personal replies.

Q&A *special offer*

Another exclusive book offer from PC Review

Many of the letters in the Q&A postbag concern problems with MS-DOS and using Config.sys and Autoexec.bat to the best effect. If you've read the article on getting the most out of DOS (page 131) and you want to know more, Harry Fairhead's book MS-DOS 5: A Power User's Guide could supply you with invaluable tips.
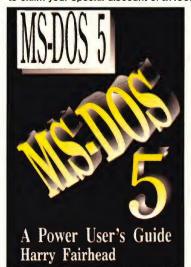
MS-DOS 5 is packed with powerful features and while it is easy to use, it has lots more to offer if you look a bit deeper. Harry Fairhead's book clearly explains how to use and manipulate files and directories, how to manage memory, create batch files and recover data from disk disasters.

A Power User's Guide looks at all the major issues concerning using an operating system and discusses the practical problems encountered when you want to set up British (or other non-US) keyboard configurations – a subject not usually considered since many books on DOS are American in origin.

Publisher I/O Press is exclusively offering a generous discount on MS-DOS 5: A Power User's Guide to PC Review readers. You can buy this book for £12.95, a saving of £7 off the normal list price of £18.95. Simply quote the reference PCRMS

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MS-DOS 5

MS-DOS 5

**A Power User's Guide
Harry Fairhead**

Q&A *update*

The power

The most common question in the mailbag concerns upgrading, but not all users are aware of the natural upgrade path built into the PC world. The processor is responsible for running the program and it often has the strongest effect on the speed of the machine. How fast any processor runs depends on the clock speed used. Double the clock speed and you halve the time it takes to run a given program. If that's all there was to it, the upgrade path would be a matter of increasing clock speed — but it isn't.

The main complication is that there are a range of different processors and the range is getting bigger all the time. Bottom of the range are the original 8088 and its slightly bigger brother, the 8086, which are used in XT class machines. Next comes the 286, then the 386SX, 386DX, 486SX and 486DX. Next year some time there should be a 586 as well.

If you run each of these processors at the same clock speed then, in order of increasing power, they are 8088, 8086, 286, 386SX, 386DX, 486SX, 486DX. Notice that the 486 is always faster than the 386 and the DX version is always faster than the SX version. Easy! The trouble starts when you need to compare processors running at different clock speeds. In the case of the 386SX vs DX, it is usually better to chose the faster clock speed. In the case of the 486 vs 386, the rule is that you need a 386 with double the clock speed of a 486 to equal it. For example, a 20MHz 486 is approximately equivalent in power to a 40MHz 386. These are rough and ready rules, but they are a starting point for comparisons.
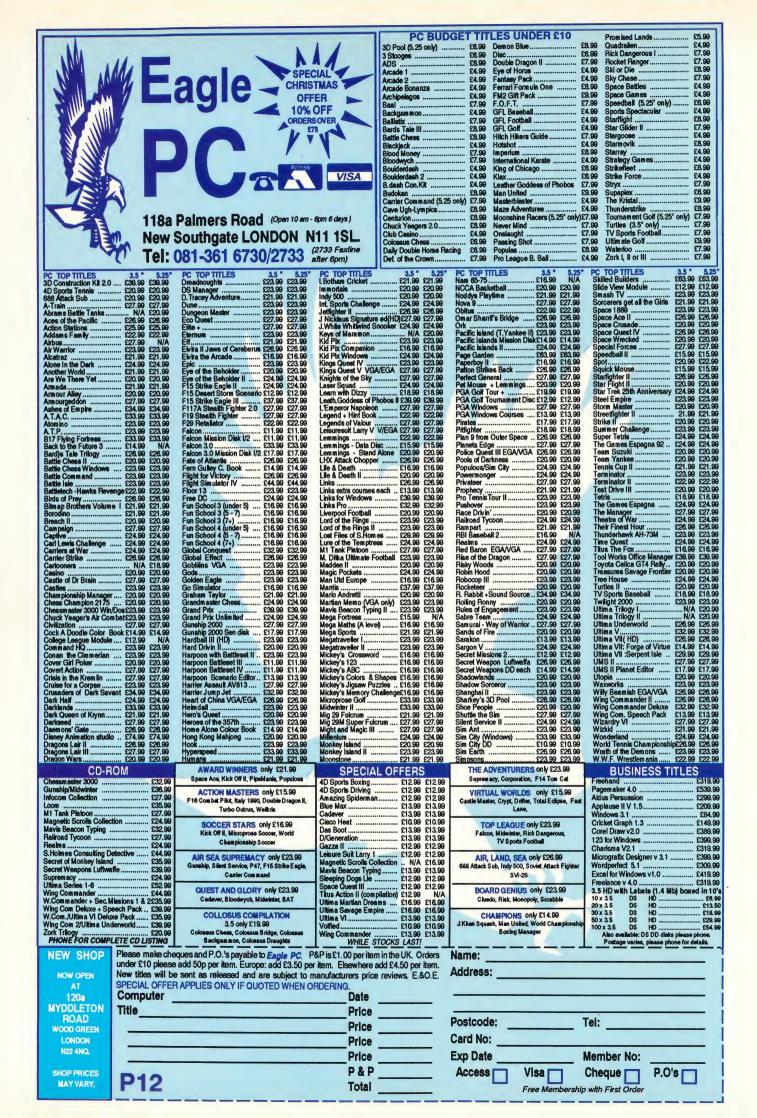
Another complication is the 'clock doubled' processors. These multiply the external clock rate by two, so a 486DX2 20MHz processor actually runs as fast as a 40MHz 486. This simple minded calculation would be true if everything in the machine worked at 40MHz but it's only the processor that's a 'go faster' variety and so the actual performance is much less. Clock doubled machines go 25% to 30% faster than the external clock would leave you to believe.

Another mystery is why should you prefer a 386SX to a 286 even if they run at the same clock speed. A 386SX and a 286 are of equal power at the same clock speed! In this case the reason has nothing to do with speed of running the program but flexibility. Only the 386 processor can do juggling tricks with memory and this is exactly what today's modern program is relying on.

So the golden rules are:

1) prefer a 386/486-based machine in nearly all cases;

2) if you have a choice, pick a DX rather than an SX at the same clock speed;

3) to equal the performance of a given 486 you need a 386DX running at roughly twice its clock speed.

■ *Mike James*

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Kevin Bulmer's

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The Secret of Monkey Island 2

"I played this for weeks on end. In fact, I played nothing else until I'd cracked it. The humour is great, and the graphics, especially the Ash-2-Life sequence, are very impressive."

Monkey Island 2 was released by Lucas Arts in 1992 to general acclaim. The original Monkey Island was a graphic adventure using Lucas Arts SCUMM program design system, in which our hero, Guybrush Threepwood, attempts to master the skills necessary to become a pirate of the high seas. In the sequel, using the latest version of the same game system, he must defeat the sinister Largo LeGrande and escape from Scabb Island. Peppered with computer game in-jokes (the Indiana Jones theme plays when you throw up a whip to swing across one of the caverns) and puzzles which touch on the absurd, Monkey Island 2 is a rarity: a sophisticated adventure which is also genuinely funny.

Kevin Bulmer

Kevin Bulmer began designing games and game graphics in 1986, and until now his best known titles are Gauntlet II, the top-down arcade-style game, and the strategy game Corporation. He's currently finishing off a role-playing game, Legends of Valour, for US Gold, which you can sample on this month's cover disk.

Kevin trained as a graphic artist and ran his own studio before concentrating on computer games. He is now managing director of DCD, a six-person team which specialises in high resolution computer animation.
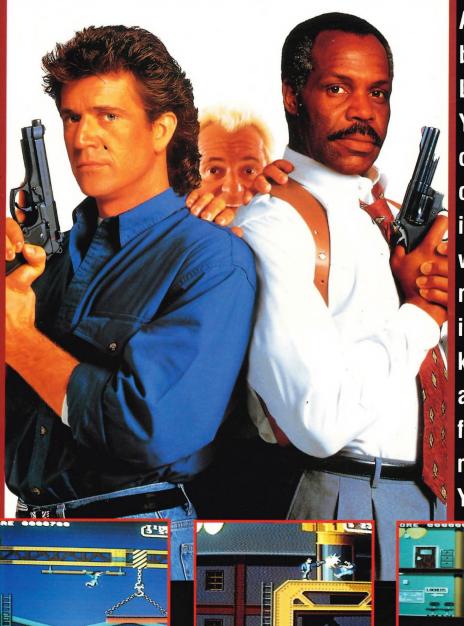
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